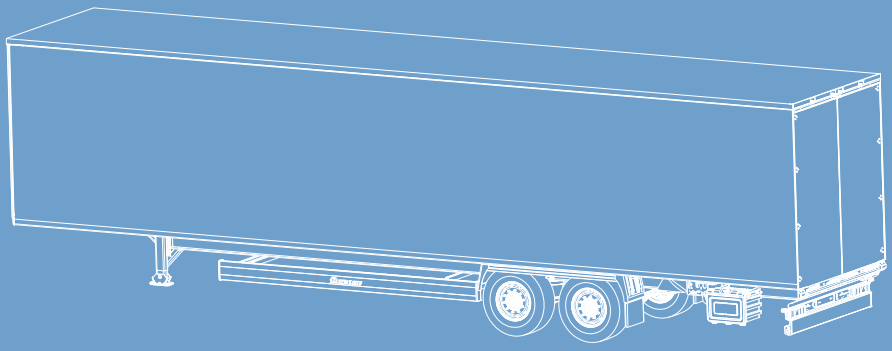
OPERATING INSTRUCTIONS
DRY LINER



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KRONE

Dear Customer,

These are the operating instructions for the KRONE vehicle you have purchased.

These operating instructions contain important information for the proper use and safe operation of the KRONE vehicle.

If these operating instructions should become completely or partially unusable for any reason, you can order replacement operating instructions for your KRONE vehicle by stating the item number.

Customer Service

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Spare Parts

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1 Information about this document

1.1 Introduction

These operating instructions are intended for the operators of the trailer and their staff. The operating instructions are designed to help you to get to know the trailer and to use it within its intended usage capabilities.

It is mandatory that the operating instructions be read, understood and applied by every person who is tasked with the following work:

- Driving, parking and manoeuvring the trailer,
- Loading and unloading the trailer,
- Resolving any disruptions to the workflow,
- Servicing the trailer (maintenance and care),
- Disposing of working materials and auxiliary materials.

The operation instructions incorporate important hints for safe, appropriate, and economical operation of the trailer. They serve to

- prevent risks and damages,
- reduce repair costs and downtimes, and
- increase the reliability and durability of the trailer.

Immediately replace operating instructions that have become illegible or are missing.

KRONE cannot be held liable for damage and operational interference caused by failure to observe these operating instructions. The warranty conditions can be found in our general terms and conditions of business.

INFO
If you have any questions, please contact KRONE customer service *(see "12.2 Customer service and support", pg. 105)*.

1.2 Other applicable documents

For safe and failure-free operation of the trailer, detailed knowledge of the individual components is required. Other documents also apply in conjunction with these operating instructions.

Please observe the following additional documents, especially the safety instructions:

- Operating instructions for the tractor unit,
- All instructions for additional parts and components,
- All instructions for additional equipment and special equipment.
- Re-order any instructions that have gone missing or become illegible *(see "12 Spare parts and customer service", pg. 105)*.

When handling the trailer and for all maintenance work, please also observe:

- The maintenance regulations for the used installed components,
- Load securing regulations.

1.3 Product identification and type plate

Every trailer can be clearly identified by the attached type plate. The vehicle ID number (VIN) is also embossed on the chassis.

The type plate is attached to the following location for product identification:

The following information is shown on the type plate:

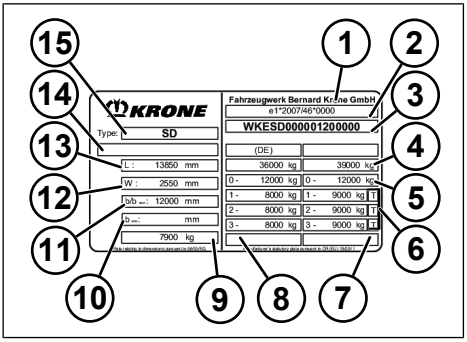


Fig. 1-1: Example type plate

1 Manufacturer
2 EC type approval number (if available)
3 Vehicle ID number
4 Approved total mass
5 Total mass on the coupling point
6 Technically approved axle loads
7 Technically approved total mass
8 If applicable, the nationally approved total masses for registration/operation including the code
9 If applicable, dead weight
10 Min. distance
11 Distance/max. distance
12 Vehicle width
13 Vehicle length
14 If applicable, national type approval no.
15 Type designation

1.4 Retention of documents

► Store these instructions and all other applicable documents in a safe place.

► Pass the complete documentation on to the next driver or owner.

1.5 Part positions

The description of part positions is always viewed in forward driving direction.

1.6 Optional components

KRONE trailers are fitted with a number of optional components. The operating instructions describe all of the components in the following sections.

All the components are not necessarily on your trailer.

1.7 Symbols used in these instructions

Various markings and symbols are used in the text in these instructions. These are explained below.

○ Bullet list
  – Sub-list

1. Numbered list

☑ Prerequisite for action

► Action step
  ⇨ Intermediate action result

✓ Result of the action

INFO
Additional information and tips.

📖 : Also observe the enclosed supplier documentation.

1.8 Copyright

These instructions represent an official document within the meaning of laws against unfair competition. They incorporate texts and drawings which, in their entirety or partly, without written consent of the manufacturer, are not to be

- copied (except attached copy originals),
- published, or
- made public by other means.

The copyright to these instructions remains with

Fahrzeugwerk Bernard KRONE

GmbH & Co. KG, D-49757 Werlte

Violations oblige compensation for damages.

2 Safety

This manual contains instructions for your safety and for safe operation.

The basic safety instructions include instructions that apply fundamentally to safe use or maintenance of the safe condition of the trailer.

The action-related warnings warn you about residual hazards and are found before a dangerous action.

► Follow all the instructions to prevent personal injury, environmental or property damage.

2.1 Warnings

Design and structure

The action-related warnings are structured as follows:

⚠ WARNING
Type and source of the danger! Explanation of the type and source of the danger. ► Measures to avert the danger.

Hazard level

The warnings are classified according to the severity of the danger. The following explains the danger levels with their associated signal words and warning symbols.

⚠ DANGER
Direct danger to life or serious injuries

⚠ WARNING
Possible danger to life or serious injuries

⚠ CAUTION
Possible slight injuries, environmental damage or property damage

⚠ WARNING
Possible serious injury caused by crushing

⚠ CAUTION
Possible slight injury caused by crushing

NOTE
Possible environmental damage or property damage

2.2 Intended use

Intended use includes the observance of all operating and maintenance instructions supplied with the vehicle as well as the observance of the maintenance intervals and conditions prescribed therein.

The KRONE trailer and its superstructures are intended exclusively for legal transportation purposes in compliance with applicable laws, rules and regulations.

Operational reliability of the vehicle is guaranteed only if all applicable instructions, settings, laws, rules, regulations, and limitations are fully complied with.

The trailer is produced with state-of-the-art manufacturing systems in compliance with all applicable safety-related laws, rules, and regulations. Nevertheless, operation of the trailer incorporates dangers for life and limb of the operator and other personnel, or danger of equipment damage, or operational problems.

► The trailer is to be operated only if in technically adequate state, and in accordance with safety and danger-related laws, rules, and regulations, under strict compliance with the operation instructions.

► Have any faults that could impair safety immediately repaired by an authorised specialist workshop.

Foreseeable misuse

Any use going beyond proper transport usage is considered non-intended. Avoid the following:

- Transport of persons or animals
- Dangerous goods transports without official and manufacturer approval.

- Transport of unsecured loads
- Transport of materials, which, due to their properties, do not ensure safe handling and transport or only with additional equipment
- Exceeding the technically permitted weights, axle loads and drawbar loads
- Exceeding the maximum vehicle speed
- Exceeding the permitted length, width and height dimensions (including by driving with an expanded rear)
- Use of components that are not approved by KRONE, e.g. tyres, accessories, spare parts

Fahrzeugwerk Bernard KRONE GmbH & Co. KG is not liable for damage resulting from non-intended use. Risks deriving from such infractions are exclusively borne by the operator.

2.3 Personnel qualification and requirements

KRONE trailers and KRONE superstructures as well as their operating components may only be used and maintained by persons who have the respective qualification and who have read and understood the operating instructions.

In the operating instructions, a distinction is made between

- Operator,
- Driving staff, and
- Skilled craftsmen.

2.3.1 Operator

The operator is responsible for proper operation of the vehicle. The operator must:

- Instruct the driving staff in the use of the vehicle,
- Ensure that the trailer is regularly checked and serviced in an authorised technical workshop.

2.3.2 Driving staff

The driving staff consists fundamentally of the vehicle driver and a co-driver if applicable. The driving staff are responsible for proper operation of the vehicle and must

- Have read and understood the operating instructions,
- Have reached the legal minimum age.
- Ensure that the trailer is regularly serviced by qualified staff.

When transporting and loading/unloading, only driving staff may be used who have received instruction prior to the first deployment and who have subsequently received verbal instruction at least once a year relating to this work.

This instruction should particularly cover the following points:

- The operating instructions,
- The measures to be taken in the event of malfunctions.

Driving is limited to persons who have the required driving license. In addition, the drivers must receive training with respect to:

- The respective transport trailer and associated tractor unit,
- The additional suppliers' information listed *(see "1.2 Other applicable documents", pg. 7)*,
- Motor Vehicle Traffic Regulations and Motor Vehicle Construction and Use Regulation, C.U.R., and
- All relevant regulations that apply to health and safety, accident prevention and environmental protection in the country of use, as well as
- Other safety-related, occupational health and road traffic regulations.

2.3.3 Skilled craftsmen

The skilled craftsmen of a specialist workshop are authorised to perform the maintenance work (maintenance and repair). Authorised skilled craftsmen must have a recognised qualification or have the relev-

ant knowledge of their specialised area required to meet the relevant regulations, rules and guidelines.

2.4 Personal protective equipment

Personal protective equipment serves to avoid injuries and is prescribed by national regulations depending on the cargo.

- ► Wear suitable personal protective equipment when loading and unloading.
- ○ Depending on the transported goods, eyes, ears and respiratory tract must be protected with suitable protective equipment.
- ○ Gloves and safety shoes are generally worn.
- ► Observe the national regulations regarding personal protective equipment.
- ► Always keep an eyewash bottle filled with clean water at hand in the working environment.

2.5 Transported material characteristics

The trailer is designed to transport many different goods.

- ► Before loading, make sure that the trailer is suitable for the goods to be carried.

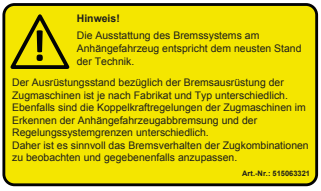
2.6 Information, warning, and mandatory signs

There are information, warning and mandatory signs attached to the trailer.

- ► Observe and follow the signs.
- ► Keep the signs clean and legible.
- ► Do not remove, paint over or paste over the signs.
- ► Immediately replace signs that have become illegible or are missing.

Depending on the equipment and use, appropriate pictograms are used in the information, warning and mandatory signs.

Sign	Attachment point/meaning
	Warning sign, risk of crushing, telescopic ladder Attachment point: On the folding telescopic ladder
	Warning sign, risk of crushing, lift axle Attachment point: In the axle area on both sides of the vehicle, on the axle body.

Sign	Attachment point/meaning
	Warning sign, floor load (max. 5460/7000/8000/9000 kg) Attachment point: Inside on the right rear door
	Warning sign, tilt stability (front area of the trailer) Attachment point: Inside on the right rear door
	Warning sign, tilt stability (rear area of the trailer) Attachment point: Inside on the right rear door
	Note! The equipment of the braking system on the trailer vehicle corresponds to the latest state of the art. The equipment level of the brake equipment on the tractor unit depends on the manufacturer and type. The coupling force controllers of the tractor vehicle in relation to the trailer vehicle braking and the control system limits differ. It is therefore sensible to observe the braking behaviour of the vehicle train and to adjust it if necessary. Attachment point: Front wall, coupling support
	Roof collision warning sign Attachment point: Front wall, interior

2.7 Danger areas

On and around the trailer there are areas with an increased danger to your safety or to the safety of other persons. Ensure adequate lighting when performing any work in hazard areas.

► Observe the following danger areas and instruct unauthorised persons to leave these areas:

Danger area	Danger
Loading and unloading area	There is a risk of injury on loose or uneven ground or on slopes.
Between the vehicle frame and the load	There is a risk of crushing.
Area approx. 5 m around the vehicle (manoeuvring area)	There is a risk of accidents.
Under the vehicle	The vehicle can move due to a defect or when starting up and injure persons.
Between the tractor unit and trailer, especially when coupling and uncoupling	Persons can be crushed or run over. The trailer can tip over or tilt up.
Connection between the tractor unit and trailer	There is a risk of injury when coupling and uncoupling the trailer from the tractor by incorrect operation when opening and closing the connections of the compressed air hose connectors and cables.

2.8 Protective and safety devices

Depending on the equipment, the trailers are equipped with the following protective and safety devices.

► Check the function of the protective and safety devices regularly.

► Have defective components repaired only by authorised specialist workshops or by KRONE.

Component	Function
Automatic anti-blockage system (ABS)	Prevents blockage of the wheels when braking
Automatic load-dependent brake power regulation (ALB)	Regulates the braking effect depending on the load status
Electronic brake system (EBS)	Braking assistance system, which contains/comprises the brake components and connected driving dynamics systems of the vehicle
Roll stability support (RSS)	Prevents the trailer from tipping over
Hazard lights	Serve to indicate a traffic hazard
Wheel chocks	Prevent accidental rolling away when parking/unhitching
Side collision protection	Prevents cyclists and pedestrians from passing under the trailer in case of accident
Underrun protection	Prevents under-running in case of rear-end collisions
Indicators and control displays	Serve to monitor and make settings for the trailer; optional systems differ according to the manufacturer

2.9 General safety instructions

The basic safety instructions include all safety measures sorted according to the theme, and must always be observed.

Pneumatic dangers

There is a risk of injury due to pressure in the pneumatic system.

- ► Do not open any components of the pneumatic system if there is pressure in the lines.
- ► Check the hose connections of the pneumatic system regularly.
- ► When aerating and venting the system, pay attention to unforeseeable movement of pneumatic actuators.
- ► Fully depressurise the pneumatic system before beginning maintenance work.

Superstructure stability

The stability of the superstructure is obtained by a variety of constructive measures and components.

- ► Do not make any changes to the delivery condition of the superstructure.
- ► Use the intended tensioning devices.
- ► Observe the instructions from the load security certificates concerning the components used.

Dangers while driving

There is a risk of impact on bridges, in tunnels or with other structures. Persons can be injured or the vehicle, the transported goods, and the structure can be severely damaged.

- ► Observe the vehicle dimensions incl. the transported goods.
- ► Observe the permissible passage dimensions (height, width).
- ► When driving in curves, be mindful of the semitrailer swivelling out.

Dangers when manoeuvring, coupling and uncoupling

When manoeuvring or coupling and uncoupling, there is a lethal risk of crushing for persons standing between the tractor unit and the trailer as well as in the coupling area.

- ► Only drive in reverse when nobody is endangered.
- ► Only manoeuvre with a guiding assistant.
- ► Before uncoupling, secure the trailer additionally with wheel chocks against accidental movement.
- ► Instruct all persons to leave the area between the tractor unit and the trailer during the coupling procedure.

Dangers when parking and unhitching

Accidental trailer movements, unstable ground and poor securing at night can cause serious accidents and injuries.

- ► Actuate the parking brake when unhitching.
- ► Also use wheel chocks on the wheels.
- ► When parking the trailer in a public traffic area during the hours of darkness, the vehicle should be particularly marked in accordance with the legal requirements.

Load distribution

Incorrect load distribution as well as improperly secured loads can lead to dangerous road handling and serious accidents or damage to the vehicle.

INFO
Observe the load distribution plan for optimum loading. The load distribution plan is individually calculated for every trailer. Using the load distribution curve, you can read the distance that must be maintained between the front wall and the load.

- ► Observe the specified axle loads and drawbar loads.
- ► Secure the load in accordance with the applicable regulations.
- ► Ensure that the load securing aids are not damaged and are functional.

Load securing

Unsecured or incorrectly secured loads can result in poor road handling or even accidents. Lost loads can cause injury to other road users.

- ► Secure the load according to the requirements of the relevant regulations for load securing.
- ► Observe the instructions on the load securing certificates.

Dangers caused by improper maintenance

Improperly performed maintenance work (care and cleaning, maintenance, repairs) impairs the safety.

- ► Perform regular inspections for defects.
- ► Perform care and cleaning work properly.
- ► Only have repair work carried out by authorised specialist workshops or by KRONE.

Operating materials

Operating materials (e.g. lubricants, coolants, fuels) are hazardous to health. Immediately seek medical attention upon ingesting operating materials. If possible, avoid breathing vapours. Do not allow operating materials to come into contact with the skin, eyes, or clothing. Clean affected skin areas with water and soap. If it enters the eyes, immediately and thoroughly clean them with abundant clear water. Change soiled clothing as soon as possible. Keep operating materials away from children.

2.10 Notes about legal regulations

The trailer is built according to the regulations that were applicable at the time of delivery in the intended country of registration.

- ► Observe compliance with the nationally prescribed monitoring inspections and time intervals.
- ► Observe compliance with the nationally prescribed weights, axle loads, and drawbar loads. They can be lower than the technically possible values.
- ► Observe compliance with the nationally prescribed maximum vehicle height for the tractor-trailer combination.

Changes to the vehicle against the data provided in the registration documents result in the operating permit becoming invalid. This includes, in particular, driving on public roads without a power supply for the brake electronics via the ISO-7638 plug connection.

- ► Do not make any unauthorised changes or manipulations.
- ► Have permitted changes entered into the vehicle documentation by a certified test centre.
- ► Only use proper and approved tyres.
- ► Only used approved and suitable spare parts *(see "12.1 Spare parts", pg. 105)*.
- ► Observe the normal use position of a moving component for normal vehicle use and when the vehicle is parked.
- ► Only drive with the EBS plug connected.
- ► Moving parts are to be positioned in the normal use position while driving, when stopped and parked:

Component	Use position
Side collision protection (collision protection, pallet storage boxes, etc.)	Stow box covers at the side perpendicular and parallel to the vehicle's longitudinal axis are closed
Rear underrun protection	Lowest distance to the road
Spray suppression (spray suppression and splash guard)	folded down

Component	Use position
Rear stacker (retractable or folding)	Extended and folded out, locked and secured
Lighting equipment (spotlights, lights, lamps, signal devices and conspicuous markings) on curtains, board walls and rear doors	Corresponding to the delivery condition of the vehicle If curtains, board walls and/or rear doors with attached lighting equipment have been removed, the lighting equipment must be mounted to the vehicle again.

2.11 Warranty and liability

The "General terms and conditions of sale and delivery" from Fahrzeugwerk Bernard KRONE GmbH & Co. KG fundamentally apply.

Warranty and liability claims for personal injury and material damage are excluded if they are due to one of more of the following causes:

- Improper use *(see "2.2 Intended use", pg. 10)*,
- Operating the trailer with missing or non-functional safety devices,
- Failure to observe the instructions, requirements and prohibitions of these operating instructions and the operating instructions for the accessories,
- Failure to follow the instructions, requirements and prohibitions of the maintenance instructions,
- Unauthorised structural changes to the KRONE product,
- Inadequate monitoring of wear parts,
- Improper maintenance or repairs not being carried out in good time,
- Use of non-approved and unsuitable spare parts *(see "12.1 Spare parts", pg. 105)*.

For the assessment of warranty and liability claims, you must permit unimpeded access to the data stored in the brake electronics. Deleting this data needed for an assessment can result in an exclusion of liability.

You can find the warranty conditions at www.krone-trailer.com.

2.12 Limits of use

- ► Observe the following requirements for the operational environment and conditions of use:
  - Permissible temperature range (depending on the specification, the additional equipment, and the tyres).
  - Permissible functional range and permissible age of the tyres
  - Permissible clearance and permissible swing radius
  - Load-bearing and level road conditions

2.13 Environmental hazards

- ► Always observe environmental protection when operating.
- ► Avoid the release of operating materials into nature and the environment.
- ► Dispose of operating materials and other chemicals in accordance with the applicable national regulations.
- ► Drive with the correct tyre inflation pressure.

3 Vehicle overview

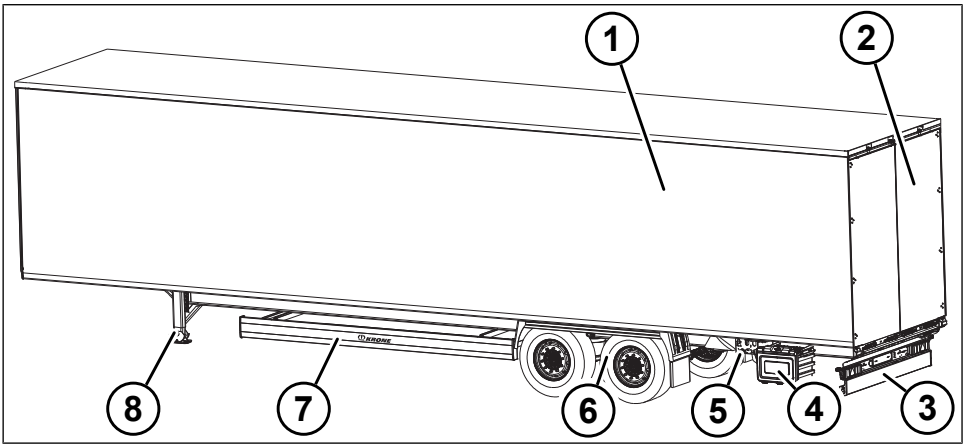


Fig. 3-1: Trailer with box body superstructure

1 Box body superstructure
2 Rear gantry
3 Rear underrun protection
4 Tool box (option)
5 Control unit for brake system/air suspension
6 Axle assembly
7 Side collision protection
8 Landing leg winches

Usage designs

KRONE Dry Liners are semitrailers for dry freight transport with variable interior equipment. Essential characteristics of the individual trailer types and their special features are described briefly below.

Dry Liner Duoplex Steel

With the Dry Liner Duoplex Steel, based on the insulated box body technology, the light, insulated superstructure is made of galvanised steel sheet. It is equipped with 30 mm thick Duoplex steel side wall panels and can have integrated double-deck guide rails and strapping strips.

Dry Liner Plywood

With the Dry Liner Plywood, the skeleton of the superstructure is made of steel. It is clad with smooth plywood and can be equipped with strapping strips and double-deck guide rails.

Dry Liner with clinched sheet steel cassettes

With the Dry Liner with clinched sheet steel cassettes, the superstructure is made of steel. The smooth side walls are made of galvanised sheet steel cassettes. This type enables a great variety of interior equipment (keyhole plates, wood panelling, various lashing rails, double-deck, etc.)

4 Commissioning

4.1 Initial commissioning

Initial commissioning is performed by Fahrzeugwerk Bernard KRONE GmbH & Co. KG. The delivery from the factory or production site is ready for operation.

- ► Check that the documentation provided is complete.
- ► Obtain instruction on operation and ask questions if necessary.

INFO
The transfer is not done by staff from Fahrzeugwerk Bernard KRONE GmbH & Co. KG.

4.2 Delivery and handover

Delivery and handover of the trailer takes place at a production site of Fahrzeugwerk Bernard KRONE GmbH & Co. KG.

- ► Check that the documentation provided is complete.
- ► Familiarise yourself with the product and the documents.
- ► Obtain instruction on operation and ask questions if necessary.
- ► Collect with a suitable tractor unit.

5 Running gear operation

5.1 Using wheel chocks

⚠ WARNING

Risk of accident due to improperly used wheel chocks!

Unintentional trailer movements and improper use of wheel chocks can result in serious injury and property damage.

- ► Secure the tractor unit additionally with wheel chocks when unhitching.
- ► Secure the uncoupled trailer with wheel chocks.
- ► Place wheel chocks only on wheels mounted on rigid axles, never on wheels mounted on lift axles or steering axles.
- ► Always secure wheel chocks on the trailer with the appropriate securing devices before travel.

5.1.1 Wheel chocks without anti-theft device

Removing the wheel chocks

- ► Remove safety split pin.
- ► Pull the wheel chocks off the retaining rod.
- ✓ The wheel chocks have been removed.

Stowing the wheel chocks

- ► Slide the wheel chocks onto the retaining bar.
- ► Secure the wheel chocks with the safety split pins.
- ✓ The wheel chocks are stowed and secured.

5.1.2 Wheel chocks with anti-theft device

Removing the wheel chocks

- ► Remove safety split pin.
- ► Pull out the wheel chocks with the theft protection chains.
- ✓ The wheel chocks have been removed.

Stowing the wheel chocks

- ► Insert the wheel chocks into the bracket.
- ► Secure the wheel chocks with the safety split pins.
- ► Thread the theft protection chain in the bracket.
- ✓ The wheel chocks are stowed and secured.

5.1.3 Wheel chocks with spring-clip mount

Removing the wheel chocks

- ► Depending on the design, push down or pull up the spring clip.
- ► Remove the wheel chock.
- ✓ The wheel chocks have been removed.

Stowing the wheel chocks

- ► Depending on the design, push down or pull up the spring clip.
- ► Insert the wheel chock in the bracket.
- ► Secure the wheel chock with the spring clip.
- ✓ The wheel chocks are stowed and secured.

5.1.4 Putting on the wheel chocks

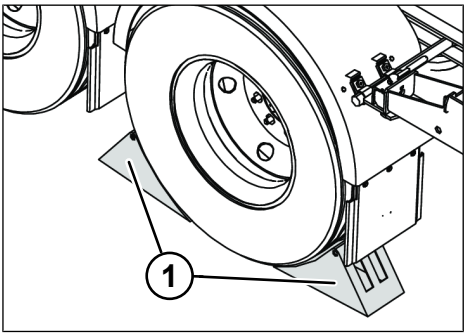


Fig. 5-1: Putting on the wheel chocks

1 Wheel chocks

- ► Place the wheel chocks in front of and behind a wheel of the rigid axle.
- ✓ The wheel chocks have been placed.

5.2 Landing leg winches

⚠ WARNING

Risk of accident due to tipping over!

A lack of supports when loading and unloading as well as when hitching and unhitching can result in serious injuries.

- ► Park the trailer on solid and level ground to avoid sinking in or tipping.
- ► Secure the trailer against rolling away by activating the parking brake.
- ► Use wheel chocks to prevent the trailer from rolling away.

⚠ WARNING

Risk of accident when driving with the landing leg winches not retracted and protruding components!

An insufficiently retracted landing leg winch can hit the ground while driving and cause serious accidents.

- ► Move the landing leg winches into driving position before driving off.
- ► Secure the crank in its holder before starting to drive.

⚠ CAUTION

Risk of injury due to crushing!

When extending the landing leg winches, limbs can be crushed between the landing leg winch and the ground.

- ► Avoid the danger areas.
- ► Wear personal protective equipment (safety shoes, gloves).

NOTE

Material damage due to longitudinal movement!

The landing leg winches can be damaged when loading and unloading as well as when the unhitched/uncoupled loaded trailer is parked for extended periods of time.

- ► Prevent longitudinal movement when the trailer is uncoupled.
- ► Only uncouple the trailer in the neutral, centred landing leg foot position.
- ► Align the loading platform horizontally.
- ► When the uncoupled trailer is parked for extended periods of time, lower the air suspension.

NOTE

Material damage due to overloading!

When the trailer is raised in high gear, the crank drive of the brace winches can be overloaded and damaged.

- ► Only use the high gear with fully unloaded and raised landing leg feet.
- ► Only use the load speed after the landing leg feet make ground contact.

Landing leg winches help to support the trailer when unhitching or to adjust the coupling height.

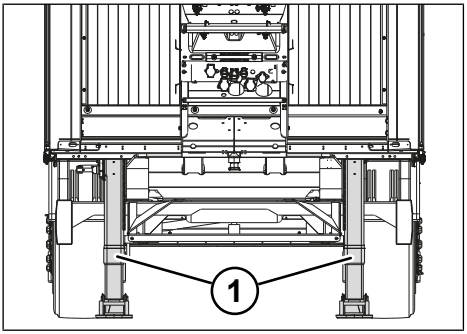


Fig. 5-2: Landing leg winches extended

1 Landing leg winches

The crank drive for the landing leg winches has two speeds:

- High gear (extending/retracting the landing leg winches)
- Load speed (raising/lowering the trailer)

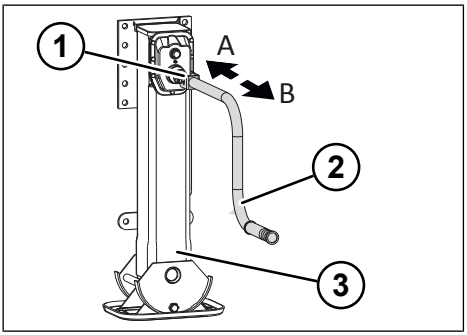


Fig. 5-3: Load speed and rapid speed of the landing leg winch

1 Crank drive shaft
2 Hand crank
3 Landing legs
A Load speed
B High speed

INFO

Cranking clockwise moves the landing leg downwards. Cranking counter-clockwise moves the landing leg upwards.

Also observe the enclosed supplier documentation.

Extending the landing leg winch

⚠ CAUTION

Risk of injury due to crank recoil!

A hand crank recoil can cause injuries when releasing the hand crank.

► Slowly ease the load off the hand crank at the end of the rotation.

► Apply the parking brake *(see "5.6.2 Parking brake", pg. 33)*.

► Ensure that the ground is load-bearing and level.

► Use wheel chocks to prevent the trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.

► Lift the hand crank from the bracket.

► Engage the hand crank on the crank drive shaft until it locks into place.

► Switch on rapid speed by pulling out the hand crank *(see "Fig. 5-3: Load speed and rapid speed of the landing leg winch", pg. 22)*.

► Wind down the landing leg winch until it touches the ground. Ensure a neutral foot position, landing leg foot in centre position.

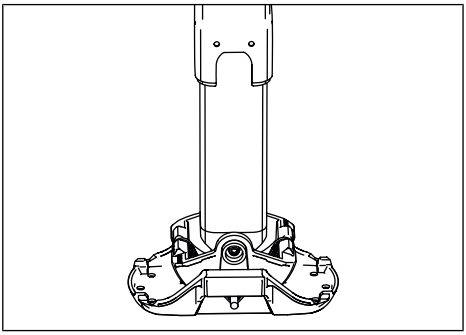


Fig. 5-4: Neutral landing leg foot position

► Wind down the landing leg winch until it touches the ground.

- ► Switch on load speed by pushing in the hand crank *(see "Fig. 5-3: Load speed and rapid speed of the landing leg winch", pg. 22)*.
- ► Use the hand crank to wind to the desired support height. Do not fully unload the wheels while doing so.
- ► Use the rear braces, if available *(see "5.3 Rear braces", pg. 23)*.
- ► Secure the hand crank in the bracket.
- ✓ The landing leg winch is extended and the trailer is supported.

Retracting the landing leg winch

⚠ CAUTION

Risk of injury due to crank recoil!

A hand crank recoil can cause injuries when releasing the hand crank.

- ► Slowly ease the load off the hand crank at the end of the rotation.

- ► Check the parking brake and apply if necessary *(see "5.6.2 Parking brake", pg. 33)*.
- ► Couple the trailer *(see "7.2 Coupling and uncoupling the trailer", pg. 67)*.
- ► Retract the rear braces, if available *(see "5.3 Rear braces", pg. 23)*.
- ► Take the hand crank from the bracket.
- ► Engage the hand crank on the crank drive shaft until it locks into place.
- ► Set to load speed by pushing in the hand crank *(see "Fig. 5-3: Load speed and rapid speed of the landing leg winch", pg. 22)*.
- ► Crank up the landing leg winch until it is unloaded.
- ► Set to high speed by pulling out the hand crank *(see "Fig. 5-3: Load speed and rapid speed of the landing leg winch", pg. 22)*.
- ► Crank up the landing leg winch to the stop.
- ► Secure the hand crank in the bracket.
- ✓ The landing leg winch is retracted and is in the driving position.

5.3 Rear braces

⚠ WARNING

Risk of accident when driving with rear brace folded down!

Partially folded up and/or unlocked rear braces can touch the ground while driving and cause accidents.

- ► Before departure, ensure that the rear braces are in the driving position and secured.

The rear braces prevent the trailer from overturning when loading and unloading and provide an optimal adjustment to the ramp. Depending on the version, KRONE trailers are equipped with the following rear braces:

- ○ Rear braces with crank mechanism
- ○ Rear braces without crank mechanism

Also observe the enclosed supplier documentation.

5.3.1 Rear braces with crank mechanism (rigid)

⚠ WARNING

Risk of injury due to a swivelled-out hand crank!

An unsecured crank can swing out while driving and injure other persons.

- ► Before departure, ensure that the hand crank is in the driving position and secured.

⚠ CAUTION

Risk of injury due to crank recoil!

A hand crank recoil can cause injuries when releasing the hand crank.

- ► Slowly ease the load off the hand crank at the end of the rotation.

The rear braces prevent the trailer from overturning when loading and unloading and provide an optimal adjustment to the ramp.

The crank drive for the rear braces has two speeds:

- High speed (extend/retract the rear brace)
- Load speed (raise or lower the vehicle)

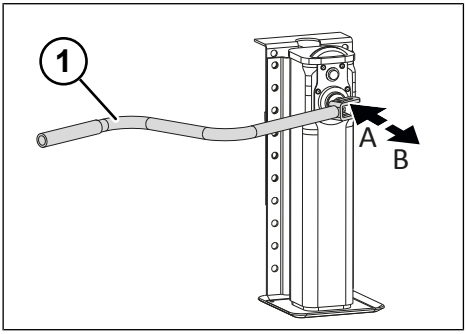


Fig. 5-5: Load speed and high speed of the rear brace

1 Hand crank
A Load speed
B High speed

INFO
Cranking clockwise moves the landing leg downwards. Cranking counter-clockwise moves the landing leg upwards.

Also observe the enclosed supplier documentation.

Putting the rear braces in the support position

- ► Apply the parking brake *(see "5.6.2 Parking brake", pg. 33)*.
- ► Ensure that the ground is load-bearing and level.
- ► Use wheel chocks to prevent the trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.
- ► Raise the trailer to the desired ramp height using the air suspension *(see "5.7 Air suspension", pg. 36)*.
- ► Lift the hand crank from the bracket.
- ► Engage the hand crank on the crank drive shaft until it locks into place.
- ► Switch on high speed by pulling out the hand crank *(see "Fig. 5-5: Load speed and high speed of the rear brace", pg. 24)*.
- ► Wind down the landing legs until they touch the ground.
- ► Switch on load speed by pushing in the hand crank *(see "Fig. 5-5: Load speed and high speed of the rear brace", pg. 24)*.
- ► Use the hand crank to wind to the desired support height.
  - ⇨ The rear braces are extended.
- ► Adjust the front landing leg winch *(see "5.2 Landing leg winches", pg. 21)*.
- ► Align the trailer level in the longitudinal and transverse directions. Do not fully unload the wheels while doing so.
- ► Lower the trailer with the air suspension *(see "5.7 Air suspension", pg. 36)*.
- ✓ The rear braces have been placed in the support position
- ✓ The trailer is supported at the rear only by the rear braces.

Putting the rear braces in the driving position

- ► Check the parking brake and apply if necessary *(see "5.6.2 Parking brake", pg. 33)*.
- ► Take the hand crank from the bracket.
- ► Engage the hand crank on the crank drive shaft until it locks into place.
- ► Set to load speed by pushing in the hand crank *(see "Fig. 5-5: Load speed and high speed of the rear brace", pg. 24)*.
- ► Wind up the landing leg until it is unloaded.
- ► Set to high speed by pulling out the hand crank *(see "Fig. 5-5: Load speed and high speed of the rear brace", pg. 24)*.
- ► Wind up the landing leg up to the stop.

► Secure the hand crank in the bracket.

✓ The rear braces have been put in driving position and the crank is secured.

5.3.2 Rear braces with crank mechanism (folding)

⚠ WARNING

Risk of injury due to a swivelled-out hand crank!

An unsecured crank can swing out while driving and injure other persons.

► Before departure, ensure that the hand crank is in the driving position and secured.

⚠ CAUTION

Risk of injury due to crank recoil!

A hand crank recoil can cause injuries when releasing the hand crank.

► Slowly ease the load off the hand crank at the end of the rotation.

The crank drive for the rear braces has two speeds:

- ○ High speed (extend/retract the rear brace)
- ○ Load speed (raise or lower the vehicle)

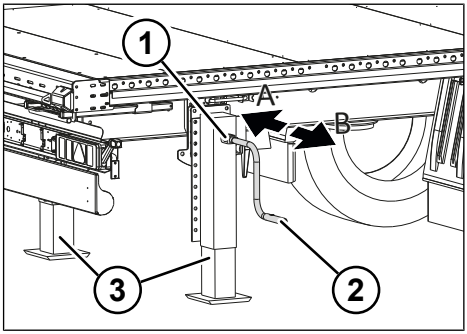


Fig. 5-6: Load speed and high speed of the rear brace

1 Crank drive shaft
2 Hand crank
3 Extended landing legs
A Load speed
B High speed

INFO

Cranking clockwise moves the landing leg downwards. Cranking counter-clockwise moves the landing leg upwards.

Also observe the enclosed supplier documentation.

Putting the rear braces in the support position

► Apply the parking brake *(see "5.6.2 Parking brake", pg. 33)*.

► Ensure that the ground is load-bearing and level.

► Use wheel chocks to prevent the trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.

► Raise the trailer to the desired ramp height using the air suspension *(see "5.7 Air suspension", pg. 36)*.

► Lift the hand crank from the bracket.

► Support the rear brace with one hand to prevent it from falling suddenly after unlocking.

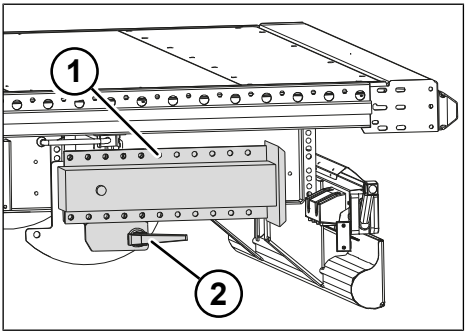


Fig. 5-7: Rear brace folded in

1 Folded in rear brace
2 Hand lever for the rear brace lock

- ► Pull the hand lever on the rear brace lock until the lock is released.
- ► Fold down the rear brace until the bolt of the lock is in front of the hole.
- ► Push in the hand lever until it locks into place.
  - ⇨ The rear brace is locked.
- ► Also fold down and lock the second rear brace.

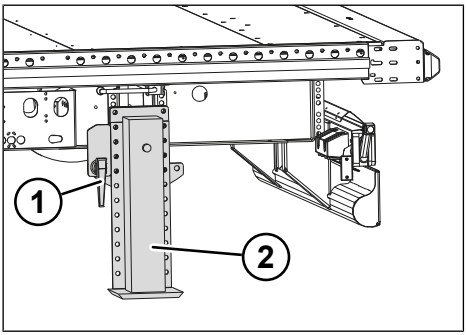


Fig. 5-8: Folded down rear brace

1 Hand lever for the rear brace lock
2 Rear brace folded down

- ► Engage the hand crank on the crank drive shaft until it locks into place.
- ► Switch on high speed by pulling out the hand crank *(see "Fig. 5-6: Load speed and high speed of the rear brace", pg. 25)*.
- ► Wind down the landing legs until they touch the ground.
- ► Switch on load speed by pushing in the hand crank *(see "Fig. 5-6: Load speed and high speed of the rear brace", pg. 25)*.
  - ⇨ The rear braces are folded down and extended.
- ► Adjust the front landing leg winch *(see "5.2 Landing leg winches", pg. 21)*.
- ► Align the trailer level in the longitudinal and transverse directions. Do not fully unload the wheels while doing so.
- ► Lower the trailer with the air suspension *(see "5.7 Air suspension", pg. 36)*.
- ✓ The rear braces have been placed in the support position.
- ✓ The trailer is supported at the rear only by the rear braces.

Putting the rear braces in the driving position

- ► Check the parking brake and apply if necessary *(see "5.6.2 Parking brake", pg. 33)*.
- ► Take the hand crank from the bracket.
- ► Engage the hand crank on the crank drive shaft until it locks into place.
- ► Set to load speed by pushing in the hand crank *(see "Fig. 5-6: Load speed and high speed of the rear brace", pg. 25)*.
- ► Wind up the landing legs until they are unloaded.
- ► Set to high speed by pulling out the hand crank *(see "Fig. 5-6: Load speed and high speed of the rear brace", pg. 25)*.
- ► Wind up the landing legs up to the stop.
- ► Pull the hand lever on the rear brace lock until the lock is released.
- ► Fold up the rear brace until the bolt of the lock is in front of the hole.
- ► Push in the hand lever until it locks into place.
  - ⇨ The rear brace is locked.

- ► Secure the hand crank in the bracket.
- ► Also fold up and lock the two rear braces.
- ✓ The rear braces have been placed in the driving position and the cranks are secured.

5.3.3 Rear braces without crank mechanism

Putting the rear braces in the support position

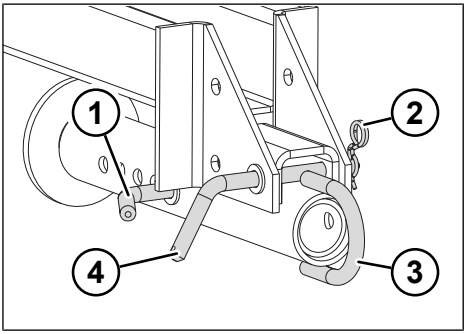


Fig. 5-9: Folding down the rear brace

1 Bolt for the height lock
2 Spring cotter pin for the folding mechanism
3 Retainer handle
4 Bolt for the folding mechanism

- ► Raise the trailer to the desired ramp height using the air suspension *(see "5.7 Air suspension", pg. 36)*.
- ► Remove the spring cotter pin for the folding mechanism.
- ► Support the rear brace by its handle and remove the bolt for the folding mechanism.
- ► Fold down the rear brace.
- ► Reinsert the bolt for the folding mechanism.

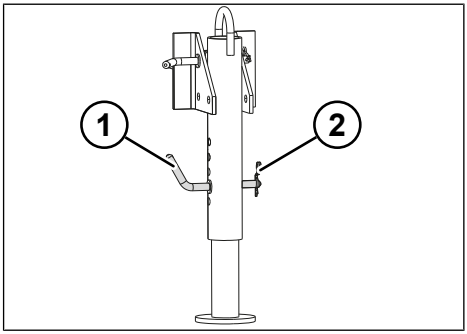


Fig. 5-10: Adjusting the height of the rear brace

1 Bolt for the height lock
2 Spring cotter pin for the height lock

- ► Secure the bolt for the folding mechanism with the spring cotter pin.
- ► Remove the spring cotter pin for the height lock.
- ► Hold the foot of the rear brace and remove the bolt for the height lock.
- ► Pull out the foot of the rear brace as necessary to the length required by the loading height.
- ► Reinsert the bolt for the height lock and secure the foot of the rear brace in the desired position.
- ► Secure the bolt for the height lock with the spring cotter pin.
- ► Fold down the second rear brace in the same way.
- ► Adjust the front landing leg winch *(see "5.2 Landing leg winches", pg. 21)*.
- ► Align the trailer level in the longitudinal and transverse directions. Do not fully unload the wheels while doing so.
- ► Lower the trailer with the air suspension *(see "5.7 Air suspension", pg. 36)*.
- ✓ The rear braces have been placed in the support position.
- ✓ The trailer is supported at the rear only by the rear braces.

Putting the rear braces in the driving position

- ► Lift the trailer with the air suspension until the rear braces no longer touch the ground *(see "5.7 Air suspension", pg. 36)*.
- ► Remove the spring cotter pin for the height lock.
- ► Hold the foot of the rear brace and remove the bolt for the height lock.
- ► Push the foot for the rear brace upwards.
- ► Reinsert the bolt for the height lock and secure the foot of the rear brace in the top position.
- ► Secure the bolt for the height lock with the spring cotter pin for the height lock.
- ► Remove the spring cotter pin for the folding mechanism.
- ► Hold the rear brace by its handle and remove the bolt for the folding mechanism.
- ► Fold up the rear brace.
- ► Reinsert the bolt for the folding mechanism.
- ► Secure the bolt for the folding mechanism with the spring cotter pin.
- ► Fold up the second rear brace in the same way.
- ✓ The rear braces have been placed in the driving position and secured.

5.4 Supply and control connections

⚠ DANGER

Disconnected supply and control connections pose a risk of accident!

Driving without the supply and control connections being connected between the tractor unit and the trailer affects the driving and brake behaviour and is prohibited by law. There is a risk of accidents due to the malfunction.

Before each trip:

- ► Connect the compressed air supply.
- ► Connect the electrical power supplies for the vehicle lighting.
- ► Connect the electrical power supplies for the brake system.

⚠ WARNING

Damaged or inadequate supply and control connections pose a risk of accident!

Damaged or inadequate supply and control connections between the tractor unit and trailer affect driving and braking behaviour and can lead to accidents.

- ► Ensure that all compressed air connections are properly connected and not leaking.
- ► Ensure proper functioning of the couplings.
- ► Replace damaged rubber seals or damaged coupling heads on the tractor unit and trailer.
- ► Ensure that the EBS plug is properly locked.

⚠ WARNING

Improperly connecting and disconnecting the supply and control connections poses a risk of accident!

Improperly connected compressed air and electrical lines affect driving and braking behaviour and can lead to accidents.

- ► Observe the connection sequence of the lines when hitching and unhitching.
- ► Always close the coupling heads with the protective caps after unhitching the brake lines.

For axle and brake control as well as air and power supply, the trailer is equipped with various connections on its front side.

More information about the plug and socket assignment can be found in the technical data *(see "13.2 Plugs and socket pin assignments", pg. 106)*.

Coupling

Depending on the design, the following couplings may be installed:

- ○ Standard coupling heads (standard),
- ○ Duo-Matic coupling and
- ○ C-coupling heads.

Connecting the standard coupling

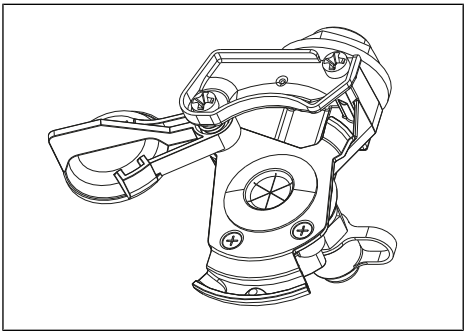


Fig. 5-11: Example of standard coupling head

☑ The parking brake on the tractor unit is applied.

☑ The parking brake on the trailer is applied *(see "5.6.2 Parking brake", pg. 33)*.

► Check the cleanliness and integrity of the sealing surfaces on the coupling heads. Clean if necessary.

► Always connect the brake compressed air coupling (yellow) first.

► Connect the supply compressed air coupling (red).

► Connect the power supply (vehicle lighting) and the brake power supply (EBS).

✓ The supply and control connections are now connected.

Disconnecting the standard coupling

☑ The parking brake on the tractor unit is applied.

☑ The parking brake on the trailer is applied *(see "5.6.2 Parking brake", pg. 33)*.

► Always disconnect the supply compressed air coupling (red) first.

► Disconnect the brake compressed air coupling (yellow).

► Disconnect the power supply (vehicle lighting) and the brake power supply (EBS).

► Close the disconnected coupling heads and plugs with the protective caps.

✓ The supply and control connections are disconnected.

Connecting the Duo-Matic coupling

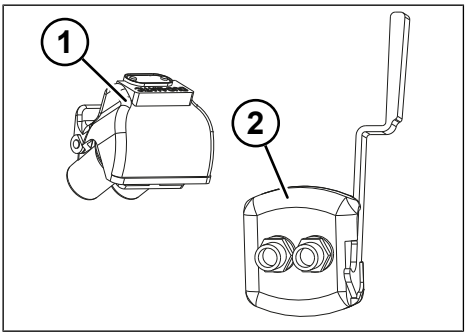


Fig. 5-12: Duo-Matic coupling

1 Compressed air coupling (tractor unit part)
2 Compressed air coupling (trailer part)

☑ The parking brake on the tractor unit is applied.
☑ The parking brake on the trailer is applied *(see "5.6.2 Parking brake", pg. 33)*.
► Check the cleanliness and integrity of the sealing surfaces on the coupling heads. Clean if necessary.
► Pull down the compressed air coupling (trailer part) lever and insert the coupling head (tractor unit part).
► Connect the power supply (vehicle lighting) and the brake power supply (EBS).
✓ The supply and control connections are now connected.

Disconnecting the Duo-Matic coupling

☑ The parking brake on the tractor unit is applied.
☑ The parking brake on the trailer is applied *(see "5.6.2 Parking brake", pg. 33)*.
► Pull down the coupling head (trailer part) lever and remove the coupling head (tractor unit part).
► Disconnect the power supply (vehicle lighting) and the brake power supply (EBS).
✓ The supply and control connections are disconnected.

Connecting C-coupling heads

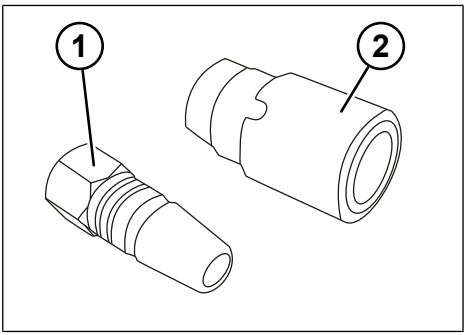


Fig. 5-13: C-coupling heads (trailer)

1 Supply compressed air coupling
2 Brake compressed air coupling

☑ The parking brake on the tractor unit is applied.
☑ The parking brake on the trailer is applied *(see "5.6.2 Parking brake", pg. 33)*.
► Check the cleanliness and integrity of the sealing surfaces on the coupling heads. Clean if necessary.
► Always connect the brake compressed air coupling first.
► Connect the supply compressed air coupling.
► Connect the power supply (vehicle lighting) and the brake power supply (EBS).
✓ The supply and control connections are now connected.

Disconnecting C-coupling heads

☑ The parking brake on the tractor unit is applied.
☑ The parking brake on the trailer is applied *(see "5.6.2 Parking brake", pg. 33)*.

- ► Always disconnect the supply compressed air coupling first.
- ► Disconnect the brake compressed air coupling.
- ► Disconnect the power supply (vehicle lighting) and the brake power supply (EBS).
- ✓ The supply and control connections are disconnected.

5.5 Draining the compressed air tanks

⚠ WARNING

Risk of accident due to condensation water!

Condensation water in the compressed air tank can cause corrosion and affect the functionality of the brake system and the air suspension. Frozen condensation water can lead to total failure of the brake system and to serious accidents.

- ► Check the compressed air tank for the presence of condensation water.
- ► Drain any existing condensation water.
- ► Drain existing condensation water more frequently in case of low or strongly fluctuating outside temperatures.

The tractor vehicles are fitted with air dryers. This means that condensate in the compressed air is largely prevented. During cold periods of the year, or when air humidity is high, condensation water can still form and collect in the compressed air tank. The compressed air supply for the brake system and the air suspension is stored in the compressed air tanks. Existing condensation water can be drained using the water drain valve.

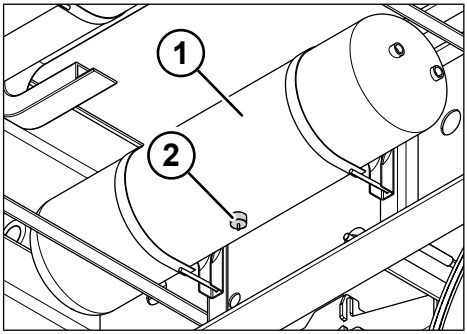


Fig. 5-14: Compressed air tank

1 Compressed air tank
2 Water drain valve

- ► Push the valve pins of the water drain valves on all compressed air tanks to the side until the condensation water is fully drained.
- ✓ The condensation water is drained.

5.6 Brake system

⚠ DANGER

Risk of accidents due to non-functional EBS!

If the EBS plug connection function is not established, the EBS of the vehicle and the automatic load-dependent brake power regulation cannot work. The vehicle is overbraked and the wheels may lock. Serious traffic accidents could occur. Driving without the EBS plug connection is prohibited by law.

- ► Only drive with an approved, connected and functioning EBS plug connection.
- ► Always connect the EBS plug connections between the tractor unit and the trailer.
- ► Verify the EBS plug connection via a system check (the magnetic valves in the EBS modulator are audibly and briefly activated and deactivated for 2 seconds after “ignition on”)
- ► Only use plug connections that comply with the regulations.
- ► Have the fault immediately repaired by the nearest contract workshop.

⚠ WARNING

Risk of accident due to unharmonised brake power tuning!

Unharmonised brake power between the tractor unit and trailer may lead to insufficient or excessive trailer braking values. This can cause wear and accidents.

- ► Monitor the automatic coupling force control to harmonize the brake power.
- ► Pay attention to the sticker on the trailer.

⚠ WARNING

Risk of accident due to insufficient air supply pressure!

If the air supply pressure is < 4.5 bar, the trailer can no longer be stopped using the service brake. If the pressure is < 2.5 bar on the red coupling head, the trailer will automatically be stopped via the spring storage.

- ► As soon as the warning display/warning lamp lights up (red and yellow), stop the trailer and park at a suitable location.
- ► Check the pressure supply and call a repair service if necessary.

⚠ WARNING

Risk of accident due to pressure loss inside the brake system!

Pressure loss in the brake system due to a leak causes a deterioration in the service brake's effectiveness until the parking brake is automatically activated. Unintended vehicle movement can cause an accident.

- ► For extended stops, additionally secure the trailer from rolling away by using the parking brake and wheel chocks.
- ► Have an authorized specialist workshop eliminate the leaks.

INFO

The brake system equipment on the trailer is state of the art. The equipment level of the brake equipment on the tractor unit depends on the manufacturer and type. Likewise, the coupling force controllers of the tractor units in relation to the trailer braking and the control system limits also differ. It is therefore sensible to observe the braking behaviour of the tractor combination and to adjust it if necessary.

INFO

The trailer may only be towed by tractor units that ensure the effectiveness of the EBS system. The EBS system includes the ABS function (automatic anti-lock system ABS), the ALB function (automatic load-dependent braking), and the RSS function (vehicle stabilization for air-suspended vehicles). Full EBS functionality is only ensured when used in conjunction with tractor units equipped with EBS equipment (ISO 7638 socket, 7-pin).

Also observe the enclosed supplier documentation.

KRONE trailers are equipped with a brake system according to the current version of UN-ECE Regulation 13.

A system check of the electronic brake system (EBS) is performed upon turning on the ignition in the tractor unit and during the trip. Errors in the EBS brake system are displayed via a warning lamp/warning display on the tractor unit's dashboard. The warning lamp/warning display lights up after turning on the ignition. If no error is detected, the warning lamp/warning display turns off after approx. two seconds.

If an error was detected during the last trip (e.g. sensor error), the warning lamp/warning display lights up and turns off if the speed is > 7 km/h.

► If the warning lamp/warning display does not turn off at the start of the trip either, have the fault repaired by a specialist workshop.

The brake system has two independent brake circuits:

- Service brake
- Parking brake

5.6.1 Service brake

INFO

Repeated operation of the service brake when the supply lines are uncoupled uses up compressed air from the air reservoir. The trailer is then only partially braked (depending on the air supply).

When the supply conduit is unhitched, the trailer is automatically braked. The black control knob on the control unit can be used to release the service brake to manoeuvre the trailer without a connected compressed air supply *(see "7.3 Manoeuvring the trailer without a connected compressed air supply", pg. 69)*.

Disengaging the service brake

► Press the black control knob.

✓ The service brake is disengaged.

✓ If the parking brake is also released, the trailer is not braked.

Applying the service brake

► Pull out the black control knob.

✓ The service brake is applied.

✓ The trailer is partially braked (depending on the air supply).

Connecting the supply conduit will automatically push out the black control knob to the driving position again.

5.6.2 Parking brake

NOTE

Property damage by driving with the parking brake applied!

Driving with the parking brake applied will damage the trailer's brakes and axles after a short time.

► Disengage the parking brake before starting the trip.

The parking brake is its own brake circuit. It is applied via the brake cylinder's spring storage parts.

The parking brake must be actuated manually. Before unhitching and for parking, the trailer must be braked using the red control knob.

To tow or manoeuvre without compressed air, the parking brake can be disengaged with the emergency release system *(see "5.6.3 Emergency release devices for the parking brake", pg. 34)*.

Applying the parking brake

► Pull out the red control knob.

✓ The parking brake is applied

✓ The trailer is braked and can be parked.

Disengaging the parking brake

⚠ WARNING

Possible risk of accidents when releasing the parking brake with the service brake released at the same time!

The trailer is not braked if the parking brake and the service brake are released at the same time. The trailer is not braked, it can roll away and cause an accident.

► Only release the service and parking brake at the same time when a towing or manoeuvring vehicle is connected to the trailer.

► Additionally secure the trailer with wheel chocks when parking or standing on slopes.

INFO

The parking brake does not disengage automatically. Prior to starting off it must be disengaged manually.

☑ The trailer is hitched.

☑ The supply and control lines are connected.

► Press the red control knob.

✓ The parking brake is released and the trailer is not braked.

5.6.3 Emergency release devices for the parking brake

⚠ WARNING

Risk of accident due to rolling away!

When the emergency release device is activated, the parking brake does not function. When it is not braked, the trailer can roll away and cause serious injuries and material damage.

► Only release the service and parking brake when a towing or manoeuvring vehicle is connected to the trailer.

► Use wheel chocks to prevent the trailer from rolling away.

► Insert the emergency release screw in its holder before starting to drive.

⚠ WARNING

Risk of accidents when driving with the emergency release screw!

Driving with the emergency release screw fitted can make the brake system inoperative and result in accidents.

► Ensure that the emergency release screw has been returned to the parking position before driving off again.

If the compressed air for the parking brake's spring storage fails due to a defect, the braking effect can be cancelled via an emergency release device on the brake cylinders.

The spring storage of the brake system can be operated without compressed air using the emergency release device. When the emergency release device is activated, the spring storage is clamped on each wheel and the parking brake is opened. By doing so, the trailer can be towed or manoeuvred.

INFO

The shape of the spring storage can vary according to the model and differ from the figure shown.

Activating the emergency release device for the parking brake

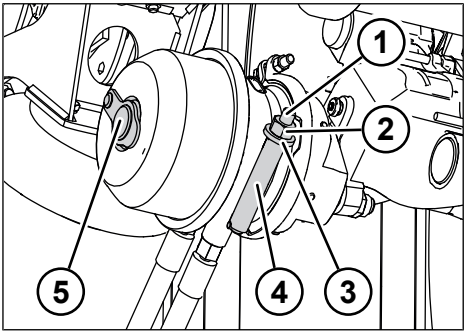


Fig. 5-15: Spring storage with emergency release device

1 Emergency release screw
2 Retainer nut
3 Flat washer
4 Bracket
5 Protective cap

► Use wheel chocks to prevent the trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.
► Loosen the retainer nut and flat washer.
► Remove the emergency release screw from the holder.
► Open the cap.

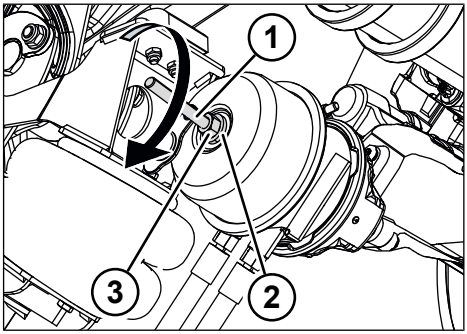


Fig. 5-16: Activating the emergency release screw

1 Emergency release screw
2 Flat washer
3 Retainer nut

► Insert the emergency release screw.
► Turn the emergency release screw clockwise (90°) until it engages.
► Screw the retainer nut and flat washer onto the emergency release screw.
► Tighten the retainer nut with the suitable spanner until the stop.
✓ The spring storage is mechanically tensioned and the brake cylinder has no more braking effect.
► Activate the emergency release device on all the spring storage devices.
✓ The emergency release device is activated and the service and parking brakes are without function.
✓ The trailer is not braked.

Deactivating the emergency release device for the parking brake

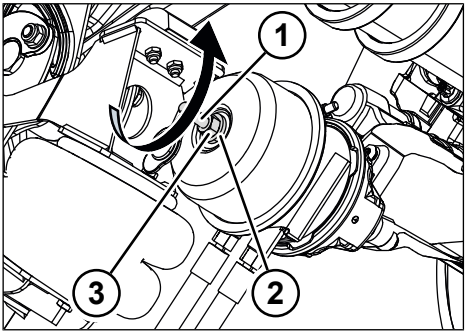


Fig. 5-17: Deactivating the emergency release screw

1 Emergency release screw
2 Flat washer
3 Retainer nut

- ► Unscrew the retainer nut and flat washer from the emergency release screw using a suitable spanner.
- ► Turn the emergency release screw key counter-clockwise (90°) and disengage it.
- ► Remove the emergency release screw.
- ► Insert the emergency release screw in its holder.
- ► Screw the retainer nut and flat washer onto the emergency release screw and tighten up to the stop with a suitable spanner.
- ► Close the cap.
- ✓ The spring storage is mechanically released and the brake is functional.
- ► Deactivate the emergency release device on all the spring storage devices.
- ✓ The emergency release device is deactivated and the service and parking brakes are functional.

5.7 Air suspension

⚠ WARNING

Risk of accident due to fully lowered or raised vehicle!

Failure to set the air suspension to the "Drive" position before starting off can result in a risk of accidents due to impaired driving characteristics or vehicle collisions in passageways.

- ► Always move the air suspension into driving position before driving off. The only exception is manoeuvring at walking speed.

⚠ CAUTION

Risk of injury due to crushing!

When lowering the trailer, the clearance under the trailer is reduced. Persons between the road and vehicle parts can be crushed and seriously injured.

- ► Avoid the danger areas.
- ► When operating the air suspension, avoid having persons underneath the trailer.

NOTE

Material damage due to grounding!

On vehicles with a large lifting height, the distance between the ground and suspension elements is reduced when reaching maximum lifting height. The spring elements on the axle could ground when manoeuvring and be damaged.

- ► For vehicles with large lifting heights, always put the air suspension in driving position.

KRONE trailers are equipped with an air suspension system. The vehicle height (e.g. to adjust it for a ramp) can be adjusted in two ways:

- ○ Manually
- ○ Electronically controlled

Also observe the enclosed supplier documentation.

Depending on the make and design of the lifting and lowering valves, the following functions can be carried out using the air suspension's control lever:

Control lever position	Function
Drive*	The trailer is always kept at the same height, regardless of the load.
Raised	The trailer is raised, e.g. to adjust it for a ramp.
Raised and engaged	The trailer is raised to the maximum possible lifting height.
Lowered	The trailer is lowered, e.g. to adjust it for a ramp.
Lowered and engaged	The trailer is lowered down to its mechanical limit (air suspension bellow without overpressure)
Stop	The trailer height achieved via lifting or lowering is maintained.

* The driving position cannot be set manually on electronically controlled air suspension. Instead, the ride height is automatically set at a driving speed of > 15 km/h.

The operating instructions for the air suspension's control lever are shown as a pictogram on the control unit.

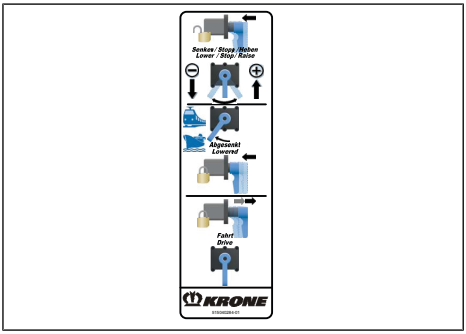


Fig. 5-18: Example pictogram of mechanically controlled air suspension

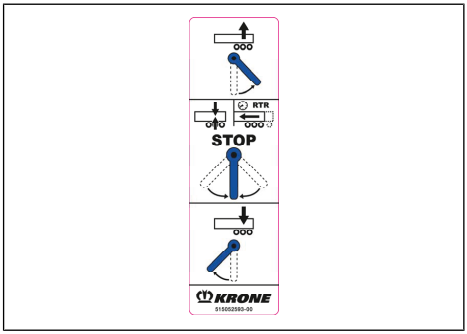


Fig. 5-19: Example pictogram of electronically controlled air suspension

To prevent chassis damage, the version with the lifting-lowering valve with automatic ride height resetting automatically sets the trailer back to the driving position when the vehicle speed exceeds 15 km/h.

NOTE

Driving with the wrong lifting height causes material damage!

Driving at the minimum or maximum lifting height on an electronically controlled air suspension can cause material damage to the trailer.

► Do not drive at the minimum or maximum lifting height.

⚠ CAUTION

Risk of accidents due to tipping movements!

If there is an improper power interruption, this may, among other things, result in the valve switching states being unclear on electronically controlled air suspension systems. Unclear valve switching positions can result in tipping movements in the longitudinal direction of the loading surface on lift axle controls. These are especially dangerous when using a forklift to load or unload from the rear.

- ► Properly shut down the entire electronic system before hitching and unhitching the trailer.
- ► Before disconnecting the supply lines (compressed air, vehicle electronics and ISO-7638 EBS power supply), switch the ignition in the tractor to "off" (terminal 15 = de-energised).

Optionally, KRONE trailers can also be fitted with a system for electronically controlled air suspension, e.g. via Wabco's ECAS system. It electronically controls the vehicle's ride height if there is a power supply and an adequate compressed air supply.

KRONE trailers with electronically controlled air suspension can be optionally equipped with various electronic control devices (control box, SmartBoard, electronic buttons, etc.).

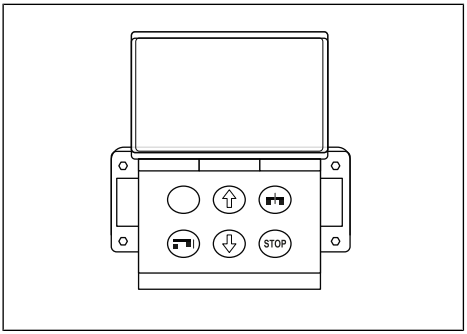


Fig. 5-20: Example of a control box (Wabco)

If there is sufficient air and power supply, the system can automatically regulate the ramp height. If there is no power supply, the ramp can also be adjusted via the electronically controlled air suspension with the control lever on the control unit.

Also observe the enclosed supplier documentation.

5.8 Lift axles

⚠ WARNING

Risk of accidents due to the raising and lowering of the lift axle!

The lift axles are automatically raised depending on the load state. If the tractor unit's ignition is turned off, the raised lift axles are lowered. There is an increased risk of injury in the danger area of the wheels.

- ► Instruct persons to leave the hazard area of the wheels during loading and unloading.

KRONE trailers can be equipped with an electronic lift axle control with fully automatic operation.

Fully automatic lifting of lift axles depending on the vehicle's axle weight (air bellows pressure) only takes place if the EBS plug connection (ISO 7638) is active and the vehicle speed is greater than 15 km/h for the first time. When the ignition is interrupted while the vehicle is at standstill, the lift axle is lowered independent of the vehicle's axle weight.

Manually overriding the fully-automatic electronic lift axle control

Automatic control is cancelled if the lift axle control is manually operated on the control switch. The dependencies on the vehicle axle weight and the vehicle speed are not taken into account in this event. An EBS plug connection is a precondition for this. The control switch for manual lift axle control is on the control unit. Controlling a further lift axle is done on the same control switch on the fully-automatic and electronic

lift axle control systems. The design and arrangement of the control switch depends on the vehicle equipment.

Using the lift axle's control switch, the driver can interrupt the automation of the lift axle control to activate the following functions:

- **Starting aid:** Manually raise the lift axle

  A lift axle can be raised by force at a maximum vehicle speed of 30 km/h and up to 30% overload for the axle remaining on the ground.
- **Manoeuvring aid:** Manually raise the lift axle

  A lift axle can be raised by force at a maximum vehicle speed of 30 km/h and up to 0 % overload for the axle remaining on the ground.
- **Deactivating the lift axle automatic system:** Manually lower the lift axles

The starting aid function refers to a lift axle in the first position of the axle group. The manoeuvring aid function refers to a lift axle in the last position of the axle group. Only the starting aid function is available if more than one lift axle is installed on the trailer. The automatic lift axle control is reactivated by turning the ignition off and on in the tractor unit.

► Operate the control switch time-dependently (rotary push-button switch with reset).

✓ The lift axle is raised in compliance with legal regulations when the button is actuated for less than 5 seconds (starting aid).

✓ When operated for longer than 5 seconds, the lift axle automatic system is deactivated and the lift axle remains down regardless of the load state (force lowered). This position is kept as long as the ignition of the tractor is not interrupted.

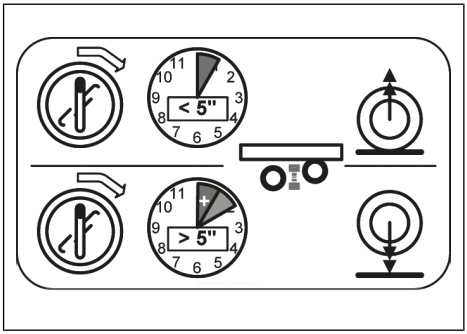


Fig. 5-21: Control switch functions of the lift axle control system

5.9 Rigid axle

KRONE trailers are equipped with rigid axles.

Also observe the enclosed supplier documentation.

5.10 Self-steering axle

KRONE trailers can be fitted with a self-steering axle with a back-up interlock. The self-steering axle is the rearmost axle of the vehicle. When driving in reverse, the steering axle is locked:

- Automatically if the back-up spotlight is activated on the tractor unit or
- Manually (e.g. during manoeuvring without supply and control connections).

Also observe the enclosed supplier documentation.

5.10.1 Automatically locking the self-steering axle via the back-up interlock

⚠ WARNING

Risk of accident when reversing with an unlocked self-steering axle!

When reversing with an unlocked self-steering axle, the vehicle can run out of track. It is no longer possible to reset to a straight position, this can result in an accident.

► Always lock the self-steering axle with the back-up interlock when reversing.

Locking the self-steering axle

► Properly connect the supply and control connections between the tractor unit and the trailer vehicle *(see "5.4 Supply and control connections", pg. 28)*.

► Straighten the combination.

► Engage reverse gear on the tractor.

✓ The self-steering axle is locked.

INFO

When the vehicle is unhitched, the back-up interlock can be controlled via the manual control unit. If the manual control unit is used, the back-up interlock must always be unlocked manually.

5.10.2 Manually locking the self-steering axle

⚠ WARNING

Risk of accident when reversing with an unlocked self-steering axle!

When reversing with an unlocked self-steering axle, the vehicle can run out of track. It is no longer possible to reset to a straight position, this can result in an accident.

► Always lock the self-steering axle with the back-up interlock when reversing.

INFO

When manoeuvring without supply and control connections between the tractor unit and trailer, the self-steering axle must always be manually locked and unlocked. This does not take place automatically.

The control switch for the back-up interlock can be found on the control unit.

INFO

The operation is also indicated by pictograms. The shape and colour of the control units may vary depending on the type of device and differ from the type shown in the figure.

Locking the self-steering axle

► Straighten the combination.

► Turn the control switch to the left.

✓ The self-steering axle is locked.

Unlocking the self-steering axle

► Turn the control switch to the right.

✓ The self-steering axle is unlocked.

5.11 Step-on devices

⚠ CAUTION

Risk of injury from falls!

Using unsuitable items to climb onto or off the vehicle or jumping from the load compartment can result in falls with injuries.

► Only use the intended step-on devices.

► Do not jump down from the load compartment.

KRONE trailers can be equipped with the following climbing aids:

- Hand strap *(see "5.11.1 Hand strap", pg. 41)*
- Folding telescoping ladder *(see "5.11.2 Folding telescopic ladder", pg. 41)*

5.11.1 Hand strap

For safe mounting and dismounting, a hand strap is installed on the inside of the corner post.

- ► Use hand straps for safe mounting and dismounting.
- ► For mounting and dismounting, always face the ladder so that the hand straps can be used without problems.

5.11.2 Folding telescopic ladder

⚠ WARNING

Risk of accident caused by an unsecured telescopic ladder!

An unsecured telescopic ladder can swing onto the road while driving and cause an accident.

- ► Prior to departure, check that the telescopic ladder is properly secured.

KRONE trailers can be equipped with a folding telescopic ladder at the rear.

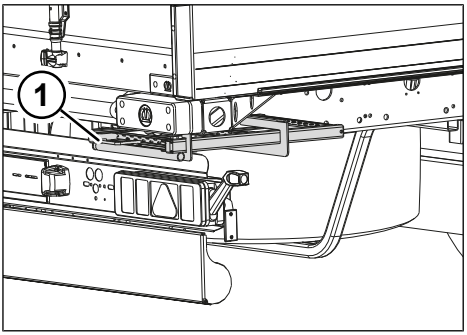


Fig. 5-22: Folding telescopic ladder

1 Handle

Using the telescopic ladder

- ► Lift the telescopic ladder past its lock.
- ► Pull out the telescopic ladder completely by its handle.

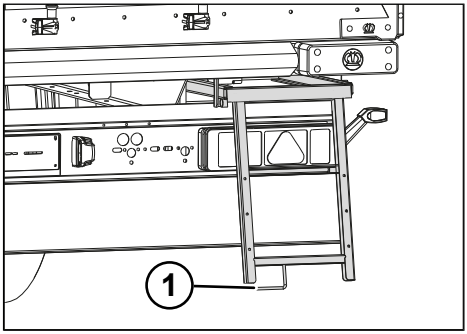


Fig. 5-23: Folding telescopic ladder in the function position

1 Handle

- ► Move the telescopic ladder to the function position.
- ✓ The telescopic ladder can be used to climb onto or off the vehicle.

Sliding in and securing the telescopic ladder

- ► Slide in the telescopic ladder completely using the handle.
- ► Lift the telescopic ladder and place it on the lock.
- ✓ The telescopic ladder is inserted and secured.

5.12 Rear underrun protection

KRONE trailers can be equipped with the following versions of the movable underrun protection:

- ○ Fold-up rear underrun protection *(see "5.12.1 Fold-up rear underrun protection", pg. 42)*
- ○ Rear underrun protection that swivels on both sides *(see "5.12.2 Rear underrun protection that swivels on both sides", pg. 43)*

5.12.1 Fold-up rear underrun protection

⚠ WARNING

Risk of accident when driving with the rear underrun protection folded up!

Driving with the rear underrun protection folded up is not permitted by law. In a collision, other motorists can drive under the vehicle and be fatally injured.

► Only drive with the rear underrun protection properly folded down and locked in place.

⚠ CAUTION

Risk of injury from the rear underrun protection folding down unintentionally!

If the rear underrun protection is folded up, but not properly secured (e.g. when loading at a rail terminal), it can suddenly fold down and injure people.

► Always lock the rear underrun protection.

Folding up the rear underrun protection

► Release the underrun protection lock.

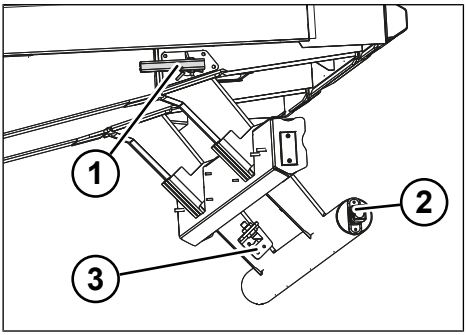


Fig. 5-24: Underrun protection lock

1 Underrun protection lock
2 Rear underrun protection
3 Spring latch

► Lift the rear underrun protection until the underrun protection locks into place.

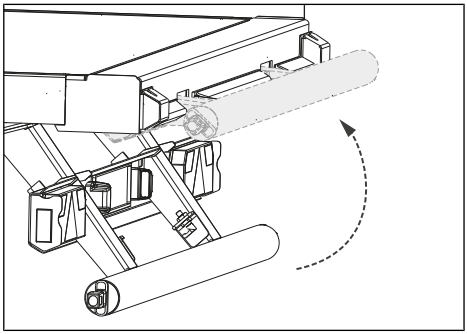


Fig. 5-25: Folding up the rear underrun protection

► Release the spring latches.

► Lift the rear underrun protection again until the spring latches engage.

✓ The rear underrun protection is folded up.

Folding down the rear underrun protection

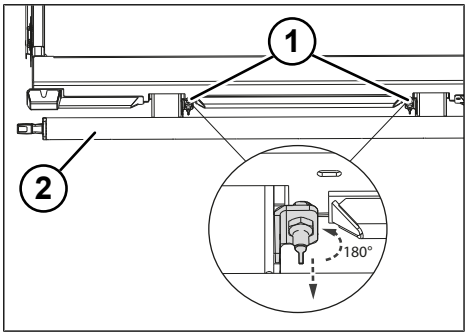


Fig. 5-26: Folding down the rear underrun protection

1 Spring latch
2 Underrun protection folded up

► Slightly lift the rear underrun protection and turn the spring latch by 180° degrees.

► Release the underrun protection lock.

- ► Fold down the rear underrun protection.
- ► Lock the rear underrun protection.
- ✓ The rear underrun protection is folded down.

5.12.2 Rear underrun protection that swivels on both sides

⚠ WARNING

Risk of accident when driving with the rear underrun protection swivelled in!

Driving with the rear underrun protection swivelled in is not permitted by law. In a collision, other vehicles can drive under the trailer and fatally injure motorists.

- ► When driving without a rear stacker, always ensure that the underrun protection is swivelled out and locked.

Swivelling out the rear underrun protection that swivels on both sides

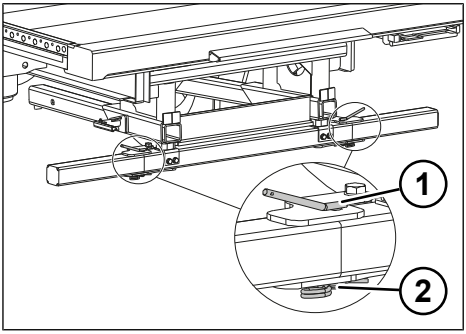


Fig. 5-27: Underrun protection that swivels out on both sides

1 Bolt
2 Securing device

- ► Remove the securing devices.
- ► Pull out the bolt.
- ► Swivel out the rear underrun protection (on both sides).
- ► Secure the bolt with the securing devices.
- ✓ The rear underrun protection is swivelled out.

Swivelling in the rear underrun protection that swivels on both sides

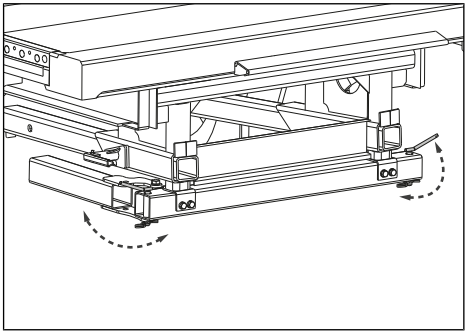


Fig. 5-28: Rear underrun protection swivelled in

- ► Remove the securing devices.
- ► Pull out the bolt.
- ► Swivel in the rear underrun protection (on both sides).
- ► Secure the bolt with the securing devices.
- ✓ The rear underrun protection is swivelled in.

5.13 Side collision protection

⚠ WARNING

Risk of accident when driving with the side collision protection folded up!

Driving with the side collision protection folded up is not permitted by law. In a collision, other motorists can get below the trailer and be fatally injured.

- ► Only drive with the side collision protection folded down and locked in place on both sides.

NOTE

Material damage when loading the trailer!

A folded-down side collision protection can cause material damage to the trailer when loading the trailer (e.g. during rail transport).

► Fold up and lock the side collision protection on both sides when loading the trailer.

KRONE trailers have a side collision protection. In addition to the fixed version, the folding version provides the possibility of folding up the side collision protection for maintenance work, to remove tools, to change the spare wheel or similar.

5.13.1 Folding side collision protection with gas pressure springs

⚠ CAUTION

Risk of injury from the side collision protection folding down unintentionally!

Malfunctioning gas pressure springs cannot secure the side collision protection. The side collision protection can suddenly fold down and injure people or swing outwards while driving, thereby causing accidents.

► Check the functionality of the gas pressure springs before beginning a trip.

► Immediately replace defective components.

Folding up the side collision protection

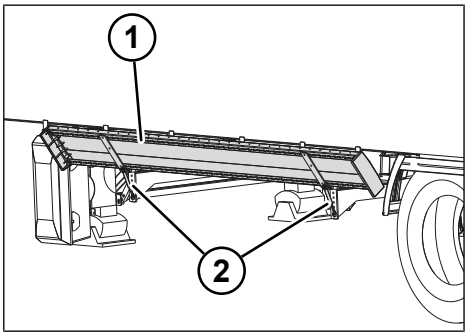


Fig. 5-29: Side collision protection folded up

1 Side collision protection
2 Gas pressure springs

► Carefully fold up the side collision protection until it is held in this position by the gas pressure springs.

✓ The side collision protection is folded up.

Folding down the side collision protection

► Carefully fold down the side collision protection until it is held in this position by the gas pressure springs.

✓ The side collision protection is folded down.

5.13.2 Folding side collision protection with lock

⚠ CAUTION

Risk of injury from the side collision protection folding down unintentionally!

An unlocked side collision protection can suddenly fold down and injure people or swing outwards while driving, thereby causing accidents.

► Lock the side collision protection in every position.

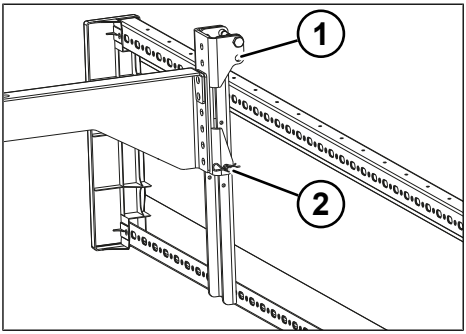


Fig. 5-30: Folded-down side collision protection ((rear view))

1 Drilled hole for the plug-in bolt while folded up

2 Plug-in bolts with spring pin

Folding up the side collision protection

- ► Pull out the spring pin on both plug-in bolts.
- ► Pull out the plug-in bolts.
- ► Fold up the side collision protection.
- ► Insert the plug-in bolts into the drilled holes.
- ► Secure the plug-in bolts with the spring pins.
- ✓ The side collision protection is folded up and secured.

Folding down the side collision protection

- ► Pull out the spring pin on both plug-in bolts.
- ► Pull out the plug-in bolts.
- ► Fold down the side collision protection.
- ► Insert the plug-in bolts into the drilled holes.
- ► Secure the plug-in bolts with the spring pins.
- ✓ The side collision protection is folded down and secured.

5.14 Rear stacker bracket

⚠ WARNING

Risk of accident due to improper transport of the rear stacker!

Improperly transported and secured rear stackers can cause serious accidents.

- ► Always properly fasten and secure rear stackers.
- ► Observe the operating instructions for the rear stacker.

⚠ WARNING

Risk of accident due to improper operation of the rear stacker!

People can be injured in the hazard area or if the rear stacker is incorrectly operated.

- ► Direct people out of the rear stacker's hazard area.
- ► Observe the operating instructions for the rear stacker.

⚠ WARNING

Risk of accident when driving with the rear underrun protection swivelled in!

Driving with the rear underrun protection swivelled in is not permitted by law. In a collision, other vehicles can drive under the trailer and fatally injure motorists.

- ► When driving without a rear stacker, always ensure that the underrun protection is swivelled out and locked.

KRONE trailers can be equipped with a rear stacker bracket. The following rear stacker brackets are possible:

- ○ Rail bracket secured with a chain
- ○ Chain bracket
- ○ Statics mast chain bracket

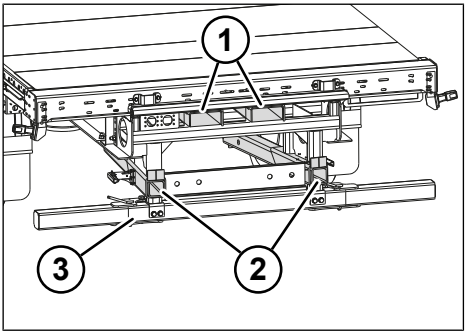


Fig. 5-31: Rail bracket

1 Fork slot
2 Rails
3 Underrun protection that swivels on both sides

The rear stacker brackets, depending on the equipment, can be designed in the following versions:

- ○ With swivelling rear underrun protection
- ○ With rigid rear underrun protection for a transportable forklift with front wheels that can fold in
- ○ With telescopic rails

► Observe the supplier documentation for operating the rear stacker and the bracket.

► Secure the rear stacker with chains during transport.

► On the rail bracket, secure the additional locks with chains to the outside chain brackets.

► Swing out the rear underrun protection when driving without the rear stacker *(see "5.12.2 Rear underrun protection that swivels on both sides", pg. 43)*.

5.15 Mud flap

The mudguards of KRONE trailers that are designed for rail loading can be equipped with fold-up mud flaps on both sides.

Folding up the mud flap

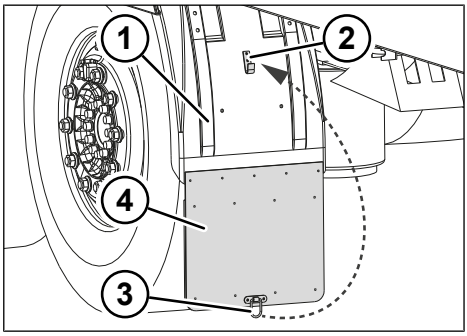


Fig. 5-32: Folded down mud flap

1 Mudguard
2 Hook
3 Hooking eyelet
4 Mud flap

► Fold up the mud flap.

► Attach the hooking eyelet to the hook on the mudguard.

✓ The mud flap is folded up.

Folding down the mud flap

► Unhook the hooking eyelet from the hook on the mudguard.

► Fold down the mud flap.

✓ The mud flap is folded down.

5.16 Spare wheel bracket

⚠ WARNING

Risk of accident from an unsecured spare wheel!

An unsecured spare wheel can fall off when driving and cause serious accidents.

► Properly secure the spare wheel.

► Only transport wheels that are designed for the spare wheel bracket.

► Check the spare wheel bracket for damage.

► Immediately repair the spare wheel bracket if defective.

⚠ CAUTION

Risk of injury due to a falling spare wheel!

The weight of a falling spare wheel can cause injuries.

► Work carefully when changing a spare wheel.

KRONE trailers can be equipped with a spare wheel bracket. Depending on the equipment, the following versions are possible:

5.16.1 Spare wheel with basket storage

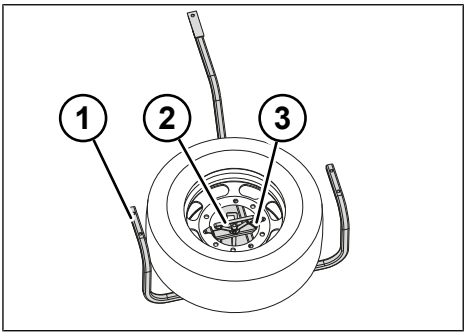


Fig. 5-33: Spare wheel with basket storage version 1

1 Storage basket
2 Rim holder
3 Securing device

Spare wheel removal

► Fold up the side collision protection, if necessary *(see "5.13 Side collision protection", pg. 43)*.
► Remove the securing device.
► Unscrew the rim holder.
► Remove the spare wheel from the storage basket.
✓ The spare wheel has been removed.

Spare wheel insertion

► Insert the spare wheel in the storage basket.
► Firmly screw the rim holder.
► Install the securing device.
► Fold down the side collision protection, if necessary *(see "5.13 Side collision protection", pg. 43)*.
► The spare wheel is inserted.

5.16.2 Spare wheel with winch

⚠ CAUTION

Risk of injury due to a falling spare wheel!

The weight of a falling spare wheel can cause injuries.

► Work carefully when changing a spare wheel.
► Before removing the securing devices, check the support cable and winch for function and damage.

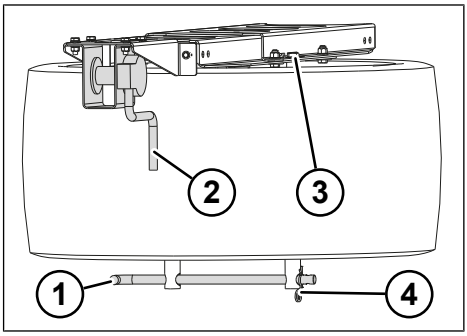


Fig. 5-34: Spare wheel with winch

1 Retainer rod
2 Hand crank
3 Tubular nut
4 Spring cotter pin

Spare wheel removal

► Fold up the side collision protection, if necessary *(see "5.13 Side collision protection", pg. 43)*.
► Remove the spring cotter pin.
► Remove the retainer rod from the tubular nuts.

- ► Unscrew the tubular nuts counter-clockwise using the retainer rod.
- ► Turn the hand crank counter-clockwise and slowly lower the spare wheel to the ground using the winch.
- ► Let out the support cable until the spare wheel can be removed from the spare wheel bracket.
- ✓ The spare wheel has been removed.

Spare wheel insertion

- ► Place the spare wheel under the support cable.
- ► Let out the support cable until the spare wheel bracket can be fastened to the rim.
- ► Turn the crank counter-clockwise and slowly lift the spare wheel using the winch until the support cable is slightly tensioned.
- ► Screw in the tubular nuts clockwise using the retainer rod.
- ► Insert the retainer rod into the tubular nuts.
- ► Secure the retainer rod with the spring cotter pin.
- ► Fold down the side collision protection, if necessary *(see "5.13 Side collision protection", pg. 43)*.
- ✓ The spare wheel is inserted.

5.16.3 Spare wheel in the pallet storage box

KRONE trailers can be equipped with a spare wheel in the pallet storage box. In this version, the spare wheel is fastened to a pull-out bracket in the pallet storage box.

Spare wheel removal

- ► Open the pallet storage box *(see "5.18 Pallet storage box", pg. 50)*.
- ► Lift the pull-out bracket out of the locks.
- ► Remove the spare wheel.
- ✓ The spare wheel has been removed.

Spare wheel insertion

- ► Place the spare wheel on the pull-out bracket.
- ► Lift the pull-out bracket with the spare wheel into the lock and slide it into the pallet storage box.
- ► Secure the spare wheel to prevent it sliding away.
- ► Close the pallet storage box *(see "5.18 Pallet storage box", pg. 50)*.
- ✓ The spare wheel is inserted.

5.16.4 Changing the spare wheel

⚠ WARNING

Risk of accident caused by loose wheel nuts!

Wheel nuts that are not tightened correctly will come loose during travel, possibly leading to serious accidents.

- ► Tighten the wheel nuts with the appropriate tightening torque.
- ► Check the tightness of the wheel nuts after each wheel change, and again shortly after the first laden journey.

⚠ WARNING

Risk of accident due to instability and rolling away!

Unintentional trailer movements can cause serious injury and property damage.

- ► Secure the trailer against rolling away by applying the parking brake.
- ► Use the wheel chocks to prevent the trailer from rolling away.
- ► Park the trailer on a solid surface to avoid sinking in or tipping.
- ► When the trailer is hitched/unhitched, ensure stability. If necessary, use additional supports.

⚠ CAUTION

Risk of injury due to a falling spare wheel!

The weight of a falling spare wheel can cause injuries.

► Work carefully when changing a spare wheel.

INFO

The tightening torques for the wheel nuts are noted in the axle manufacturer's supplier documentation.

Removing the wheel

► Lock the tractor unit to prevent unintended movement while changing the wheel.

► Secure the tractor unit and trailer according to the regulations for moving traffic (warning sign, etc.).

► Use wheel chocks to prevent the tractor unit and trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.

► Apply the parking brake on the trailer *(see "5.6.2 Parking brake", pg. 33)*.

► Loosen the wheel nuts by one turn.

► Place the jack under the axle as close as possible to the defective wheel.

► Lift the axle with the jack until the defective wheel no longer touches the ground.

► Unscrew the wheel nuts and remove them.

► Remove the defective wheel from the axle.

✓ The wheel is removed.

Mounting the spare wheel

► Remove the spare wheel from the spare wheel bracket *(see "5.16 Spare wheel bracket", pg. 46)*.

► Slide the spare wheel onto the wheel hub.

► Screw on the wheel nuts and slightly tighten.

► Lower the axle with the jack.

► Properly tighten the wheel nuts in a criss-cross pattern. Please consult the axle manufacturer's supplier documentation for the specified tightening torque.

► Insert the defective wheel in the spare wheel bracket and secure it *(see "5.16 Spare wheel bracket", pg. 46)*.

✓ The spare wheel has been mounted.

► Check the tyre inflation pressure of the spare wheel used.

5.17 Storage box

⚠ WARNING

Risk of accident when driving with an open storage box!

If the storage box lid is open, objects may fall out and cause accidents.

► Only drive with the storage box closed and secured.

⚠ CAUTION

Risk of injury due to falling objects!

When the storage box is opened, objects may fall out and injure people.

► Be careful when opening the storage box and watch for falling objects.

The storage box is mounted underneath the trailer. The storage box is part of the side collision protection or replaces the side collision protection.

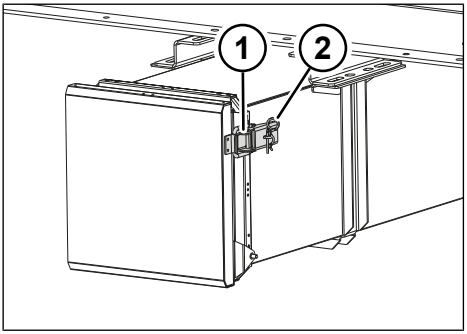


Fig. 5-35: Storage box

1 Tension lock
2 Spring cotter pin

Opening the storage box

► Remove the spring cotter pin.
► Open the tension locks.
► Fold the lid down.
✓ The storage box is open.

Closing the storage box

► Fold the lid up.
► Close the tension locks.
► Secure the tension locks with spring cotter pins.
✓ The storage box is closed and secured.

5.18 Pallet storage box

⚠ WARNING

Risk of accident when driving with an open pallet storage box!

If the pallet storage box lid is open, pallets may fall out and cause accidents.

► Only drive with the pallet storage box closed and secured.

NOTE

Material damage when driving on uneven ground!

When driving on uneven ground with low ground clearance, the pallet storage box can be damaged.

► When driving on uneven ground, ensure that there is sufficient ground clearance.

On KRONE trailers with pallet storage boxes, the lids of the storage boxes replace the side collision protection. The lids of the pallet storage boxes are opened and closed with tension locks. Depending on the version, they are located on top or on the side of the lid.

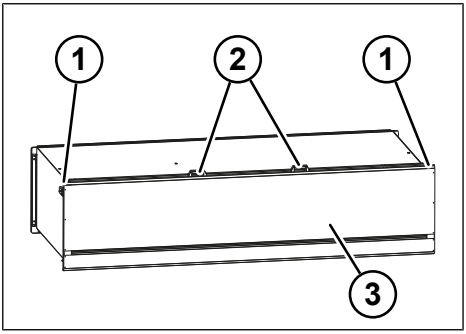


Fig. 5-36: Pallet storage box

1 Tension locks
2 Handles
3 Lid

Opening the pallet storage box

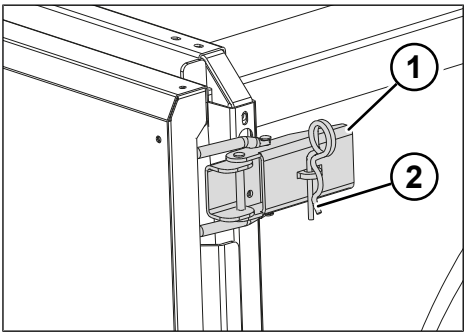


Fig. 5-37: Tension lock

1 Tension lock
2 Spring cotter pin

- ► Remove the spring cotter pin.
- ► Open the tension locks.
- ► Carefully fold down the lid by the handles while simultaneously sliding it into the guide rails at the bottom of the pallet storage box.
- ✓ The pallet storage box is open.

Closing the pallet storage box

- ► Pull out the lid from the guide rails by the handles and simultaneously fold it up carefully.
- ► Close the tension locks.
- ► Secure the tension locks with spring cotter pins.
- ✓ The pallet storage box is closed and secured.

5.19 Tool box

⚠ WARNING

Risk of accident when driving with an open tool box!

When driving with an open tool box, objects may fall out and cause accidents.

- ► Only drive with the tool box closed and secured.

⚠ CAUTION

Risk of injury due to falling objects!

When the tool box is opened, objects may fall out and cause injuries.

- ► Be careful when opening the tool box and watch for falling objects.

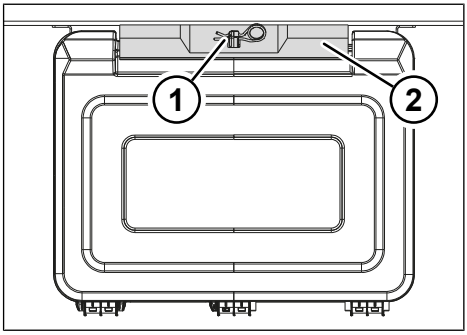


Fig. 5-38: Tool box

1 Spring cotter pin
2 Locking flap

Opening the tool box

- ► Fold up the side collision protection, if necessary *(see "5.13 Side collision protection", pg. 43)*.
- ► Remove the spring cotter pin.
- ► Fold up the locking flap.
- ► Open the lid.
- ✓ The tool box is open.

Closing the tool box

- ► Fold up the lid.
- ► Fold down the locking flap.
- ► Secure the locking flap with a spring cotter pin.
- ► Fold down the side collision protection, if necessary *(see "5.13 Side collision protection", pg. 43)*.
- ✓ The tool box is closed and secured.

5.20 Water tank

⚠ CAUTION

Health hazard due to neglected hygiene!

If the hygiene regulations are not observed, the water may be contaminated. This can result in a risk to health.

- ► Do not fill any fluids other than water in the water tank.
- ► Ensure cleanliness and hygiene.

NOTE

Material damage due to frost!

Frost can damage a filled water tank.

- ► Do not completely fill the water tank if there is a risk of frost.

KRONE trailers can be equipped with a water tank. The water tank is installed on the frame under the chassis and is used to transport water.

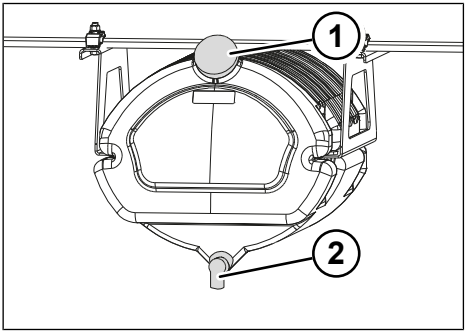


Fig. 5-39: Water tank

1 Filler neck with screw cap
2 Water tap

Using the water tank

- ► Fill water through the filler neck.
- ► Close the filler neck with the screw cap.
- ► Draw water using the water tap on the water tank.
- ► Close the water tap.

5.21 Multibox

⚠ WARNING

Risk of accident when driving with an open Multibox!

When driving with an open Multibox, objects may fall out and cause accidents.

- ► Drive only with a properly closed and secured Multibox.

⚠ CAUTION

Risk of injury due to falling objects!

When opening the Multibox, objects may fall out and cause injuries.

- ► Be careful when opening the Multibox and watch for falling objects.

Opening the Multibox

- ► Release the locks on the lid.
- ► Fold down the lid.
- ✓ The Multibox is opened.

Closing the Multibox

- ► Fold up the lid.
- ► Close the locks on the lid and secure them.
- ✓ The Multibox is closed and secured.

5.22 Fire extinguisher

Unmaintained and unchecked fire extinguishers may not work in an emergency and will not be able to fight any potential fires. Used fire extinguishers must be replaced after a single use. Additional instructions can be found on the housing of the fire extinguisher.

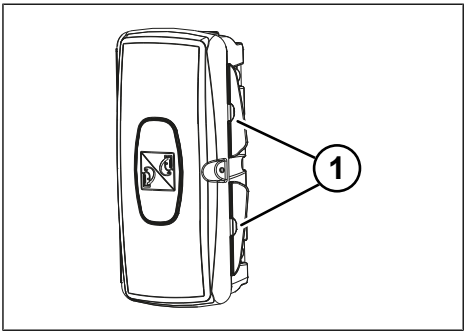


Fig. 5-40: Storage box

1 Quick-release fasteners

Removing the fire extinguisher from its storage box

► Release the quick-release fastener on the lid.

► Swivel the cover to the side.

► Remove the fire extinguisher.

✓ The fire extinguisher is removed and can be used.

Placing the fire extinguisher in the storage box

► Insert the fire extinguisher.

► Close the lid.

► Close the quick-release fasteners on the lid.

✓ The fire extinguisher is inserted in the storage box.

6 Superstructure operation

6.1 Rear gantry

⚠ WARNING

Risk of accident due to loss of load!

If the doors are unlocked and unsecured, the load falling out while driving can result in personal injury and material damage.

► Check that the doors are locked before every trip.

⚠ CAUTION

Personal injury or material damage due to swinging doors!

Unlocked doors can suddenly swing open, injure people, and cause material damage to the trailer superstructure.

► Check that the doors are locked before every trip.

► Do not drive with open or unlocked doors.

► To prevent the doors from bumping on the trailer superstructure, always swivel the lock lever back to its initial position (parallel to the door).

► Always secure open doors with door stops.

⚠ CAUTION

Risk of injury from falling loads!

Cargo falling out can injure people when the doors are opened and can cause material damage.

► When opening the doors, watch out for falling loads.

⚠ CAUTION

Risk of injury from falls!

Using unsuitable items to climb onto or off the vehicle or jumping from the load compartment can result in falls with injuries.

► Only use the intended step-on devices.

► Do not jump down from the load compartment.

⚠ CAUTION

Risk of injury when operating the superstructure!

When working on the superstructure, limbs may be crushed or other injuries may result.

► Watch for swivelling components and hinge parts.

► Wear protective gloves.

To operate the doors, observe the following instructions:

- Park the vehicle straight on level ground.
- Make sure that all tension bolts of the turn rods are locked at the top and bottom.
- When closing the doors, pay attention to obstacles that could damage the door seals.

Depending on the version, the doors on the rear gantry are locked with two or four turn rod locks.

6.1.1 Doors

Depending on the version, the doors on the rear gantry are locked with two or four turn rod locks. These door locks are designed for one-handed or two-handed operation, depending on the version.

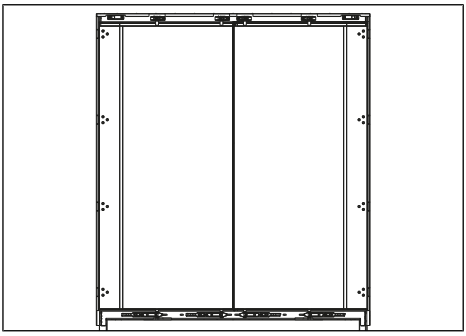


Fig. 6-1: Rear gantry with internal turn rods

6.1.1.1 Door lock with one-handed operation

Opening the door lock

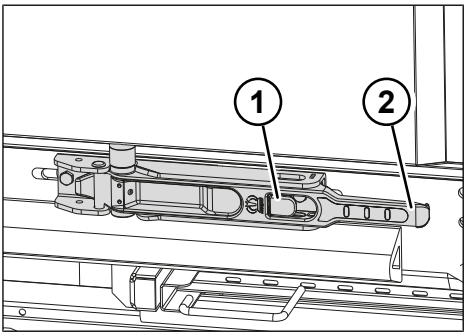


Fig. 6-2: Door lock with one-handed operation

1 Lock
2 Lock lever

► Push in the lock of the right door lock. If there are two door lock levers, press both locks at the same time.
  ⇨ The lock lever snaps out, the door is unlocked.

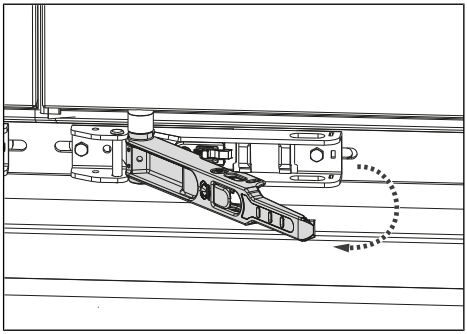


Fig. 6-3: Swivelling out the door lock lever

► Swivel out the door lock lever so that the tension bolts push the door open.
► Open the door leaf.
► Both door lock levers should then be moved back to their original position.
► Secure the swivelled open door leaves with door stops *(see "6.1.1.3 Door stop", pg. 56)*.
  ⇨ The right-hand door lock is opened.
► Open the left door lock in the same way.
✓ Both door locks are opened and fastened.

Closing the door lock

► Release the left door stop.
► Close the left door leaf.
► Swivel in the door lock lever so that the tension bolts pull the door closed. If there are two door lock levers, close both at the same time.
► Firmly press the door lock lever so that the lock engages.
  ⇨ The left-hand door lock is closed.
► Close the right door lock in the same way.
✓ Both door locks are closed.

6.1.1.2 Door latch of dual-action design

Opening the door locks

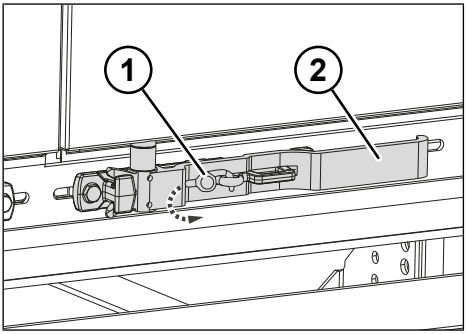


Fig. 6-4: Door lock with two-handed operation

1 Anti-tilt device
2 Door lock lever

- ► Press the right door lock lever in the vehicle direction. If there are two door locks on one door leaf, unlock the door locks successively.
- ► Open the anti-tilt device.
- ► Swivel out the door lock lever so that the tension bolts push the door open.
- ► Open the door leaf.
- ► Swivel the door lock lever back to the original position.
- ► Secure the swivelled open door leaves with door stops *(see "6.1.1.3 Door stop", pg. 56)*.
  - ⇨ The right-hand door lock is opened.
- ► Open the left door lock in the same way.
- ✓ Both door locks are opened and fastened.

Closing the door locks

- ► Release the left door stop *(see "6.1.1.3 Door stop", pg. 56)*.
- ► Close the door leaf.
- ► Swivel in the door lock lever so that the tension bolts pull the door closed.
  - ⇨ The left-hand door lock is closed.
- ► Close the anti-tilt device.
- ► Close the right door lock in the same way.
- ✓ Both door locks are closed.

6.1.1.3 Door stop

⚠ CAUTION

Risk of crushing when operating the door stop!

The spring-loaded door stop can spring back and crush fingers and hands.

- ► Wear work gloves.
- ► Grab the U-shaped door stop as far below the curve as possible during use.

Securing the door with the door stop

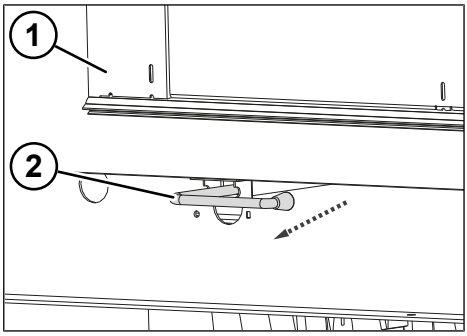


Fig. 6-5: Pulling the door stop outwards

1 Door leaf swung open
2 Door stop

- ► Pull out the door stop against the spring force.

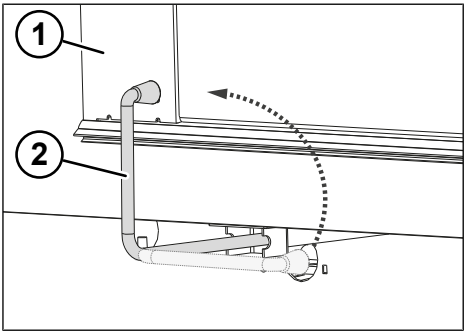


Fig. 6-6: Swivelling the door stop upwards

1 Door leaf swung open
2 Door stop

► Swivel the door stop upwards.
► Move the door stop against the swung-open door.

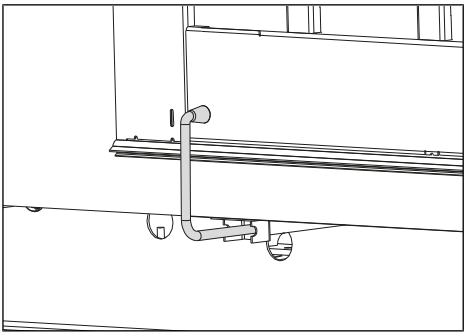


Fig. 6-7: Door leaf locked with the door stop

✓ The door is locked with the door stop.

Release the door from the door stop

► Move the door stop outwards from the swivelled open door.

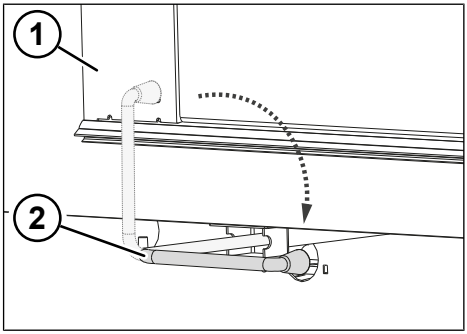


Fig. 6-8: Swivelling the door stop downwards

1 Door leaf swung open
2 Door stop

► Swivel the door stop downwards.
► Turn in the door stop with the spring force.
✓ The door is released from the door stop.

6.1.1.4 Safety lock

Depending on the version, KRONE trailers can be equipped with an additional safety lock on the door leaves. This additional latch enables the attachment of a sturdy U-lock for the safety lock.

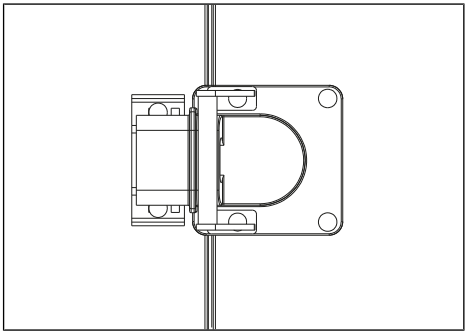


Fig. 6-9: Version 1 safety lock

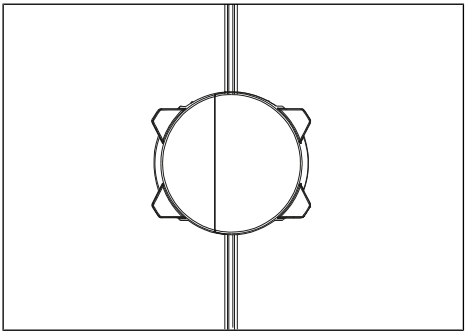


Fig. 6-10: Version 2 safety lock

6.1.2 Tail lift

⚠ WARNING

Risk of tipping due to unfavourable load distribution!

An unfavourable load distribution can cause an uncoupled trailer to tip during loading and unloading and injure people.

► Never load or unload the tail lift when the trailer is uncoupled.

⚠ CAUTION

Risk of accident due to improper use of the tail lift!

People in the tail lift's hazard area can be injured when operating the tail lift.

► Only have trained specialist personnel operate the tail lift.

► Secure the hazard area with pylons.

► Direct people out of the tail lift's hazard area during operation.

► Always completely lower the tail lift.

► Secure the tail lift to prevent unauthorised use.

► Do not exceed the tail lift's load capacity (observe the type plate).

► Also observe the enclosed supplier documentation.

Also observe the enclosed supplier documentation.

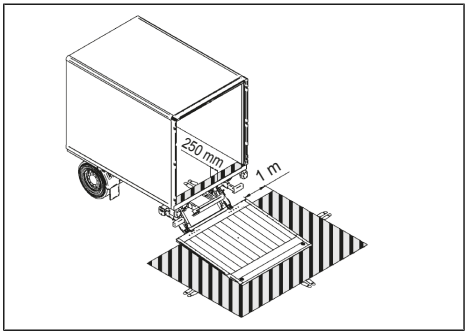


Fig. 6-11: Hazard area of the tail lift

The tail lift can be retracted or is standing depending on its design.

Retractable tail lift

The retractable tail lift is folded under the superstructure.

The control unit of the tail lift is located under the superstructure.

► Also observe the enclosed supplier documentation.

Standing tail lift

The standing tail lift is standing at the rear.

The control unit of the tail lift is located under the superstructure.

► Also observe the enclosed supplier documentation.

Power supply

⚠ CAUTION

An excessive charging current poses a cable fire hazard!

If the tail lift is operated while the vehicle motor is running, the charging current may be too high and cause the cable to catch fire.

► Turn off the tractor unit's motor while operating the tail lift.

NOTE

Unsuitable charging cables pose a fire hazard and may cause material damage!

Unsuitable charging cables may tear or break and cause fires.

► Only use coiled flex cables.

► Also observe the enclosed supplier documentation.

The tail lift is supplied with power either

- via an auxiliary battery or
- via direct supply from the tractor unit.

Auxiliary battery

Two 12V batteries in the trailer supply the tail lift with power. The electric charging cable is connected to the tractor unit's plug and must remain connected while driving. The battery is charged when the motor of the tractor unit is running and the voltage is greater than 26.4 V. The battery is not charged when the motor of the tractor unit is not running and the voltage falls below 25.6 V. The battery is not charged when the tail lift is actuated.

Direct supply

The tractor unit's batteries directly supply the tail lift with current. The electric charging cable is connected to the tractor unit's plug and must remain connected while driving.

6.1.3 Top flap

KRONE trailers with a tail lift can be equipped with a top flap.

Opening the top flap

INFO

To prevent damage, be mindful of the height when swinging out the top flap.

► Open the tail lift.

► Open the top flap completely with the assistance of the gas pressure springs.

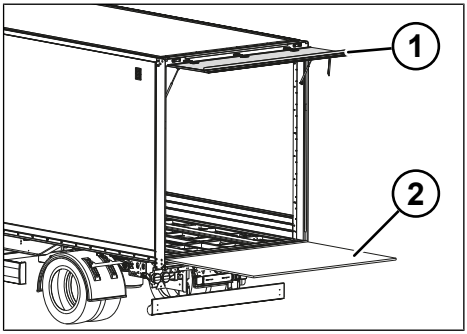


Fig. 6-12: Top flap opened

1 Top flap opened
2 Tail lift folded down

✓ The top flap is open.

Closing the top flap

► Pull down the top flap against the resistance of the gas pressure springs.

► Close the tail lift.

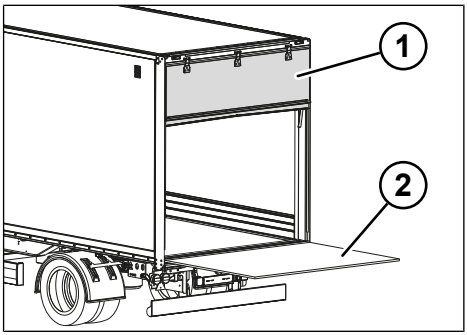


Fig. 6-13: Top flap closed

1 Top flap closed
2 Tail lift folded down

✓ The top flap is closed.

6.1.4 Mechanically driven rolling door

⚠ WARNING

Risk of accident due to loss of cargo!

Unlocked rolling doors can open again while on the road. Cargo falling out can cause personal injury as well as material damage.

► Check that the rolling door is locked every time before setting off.

⚠ CAUTION

Risk of injury from falling cargo!

Cargo falling out can injure people when the rolling doors are opened and can cause material damage.

► When opening the rolling doors, always watch out for falling cargo.

⚠ CAUTION

Risk of injury when operating the roller shutter!

If the roller shutter is operated incorrectly, limbs may be crushed or other injuries may result.

► Only open and close the roller shutter using the handle.

► Before closing the roller shutter, make sure that there is no one inside the box body.

► Ensure that the locking latch is working properly.

► Also observe the enclosed supplier documentation.

KRONE trailers can be equipped with a roller shutter. Depending on the equipment, two different versions are possible.

Type 1

Opening the roller shutter

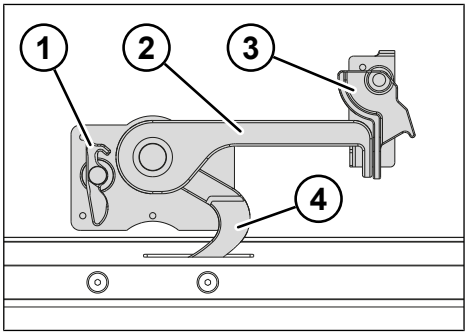


Fig. 6-14: Hook locking device

1 Locking latch
2 Lock lever
3 Fall protection
4 Locking hook

► Fold up the fall protection.

► Swing the locking lever around until the locking latch clicks into place.

CAUTION! Risk of being shut in by the roller shutter accidentally falling shut. Check that the locking latch is working correctly.

► Push up the roller shutter completely with the handle.

✓ The roller shutter is open.

Closing the roller shutter

⚠ CAUTION

Risk of injury by using the door strap incorrectly!

The door strap can snap if the load on it is too great.

► Never use the door strap to climb up or down.

► Do not tie anything to the belt strap.

► Pull the roller shutter down as far as possible using the inside door strap.

- ► Pay attention to obstacles in the cargo that can damage the seals.
- ► Push the roller shutter all the way down using the handle.
- ► Release the locking latch.
- ► Push down the roller shutter with the handle.
- ► Swing the locking lever around again.
- ► Check that the locking latch is correctly positioned.
- ► Fold down fall protection.
- ✓ The roller shutter is closed and locked.

Type 2

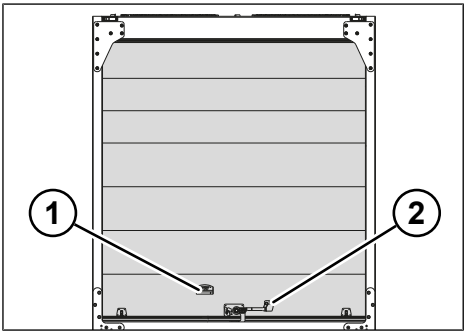


Fig. 6-15: Version 2 roller shutter

1 Handle
2 Locking mechanism

Opening the roller shutter

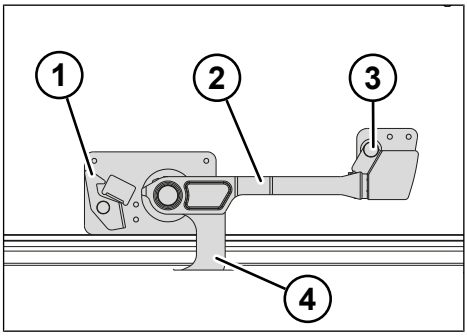


Fig. 6-16: Version 2 locking device

1 Locking latch
2 Lock lever
3 Fall protection
4 Locking hook

- ► Fold up the fall protection.
- ► Swing the locking lever around until the locking latch clicks into place.

CAUTION! Risk of being shut in by the rolling door accidentally falling shut. Check that the locking latch is working correctly.

- ► Push up the roller shutter completely with the handle.
- ✓ The roller shutter is open.

Closing the roller shutter

⚠ CAUTION

Risk of injury by using the door strap incorrectly!

The door strap can snap if the load on it is too great.

- ► Never use the door strap to climb up or down.
- ► Do not tie anything to the belt strap.

- ► Pull the roller shutter down as far as possible using the inside strap.
- ► Pay attention to obstacles in the cargo that can damage the seals.

- ► Push the roller shutter all the way down using the strap.
- ► Release the locking latch.
- ► Push down the roller shutter with the strap.
- ► Swing the locking lever around again.
- ► Check that the locking latch is correctly positioned.
- ► Fold down fall protection.
- ✓ The roller shutter is closed and locked.

6.2 Side door

⚠ CAUTION

Risk of injury from falls!

Using unsuitable items to climb onto or off the vehicle or jumping from the load compartment can result in falls with injuries.

- ► Only use the intended step-on devices.
- ► Do not jump down from the load compartment.

⚠ CAUTION

Risk of injury from falling loads!

Cargo falling out can injure people when the doors are opened and can cause material damage.

- ► When opening the doors, watch out for falling loads.

⚠ CAUTION

Personal injury or material damage due to swinging doors!

Unlocked doors can suddenly swing open, injure people, and cause material damage to the trailer superstructure.

- ► Check that the doors are locked before every trip.
- ► Do not drive with open or unlocked doors.
- ► To prevent the doors from bumping on the trailer superstructure, always swivel the lock lever back to its initial position (parallel to the door).
- ► Always secure open doors with door stops.

Opening the side door

- ► If applicable, fold down the protective cover for the lock and open the lock.
- ► Close the opened protective cover for the lock again.

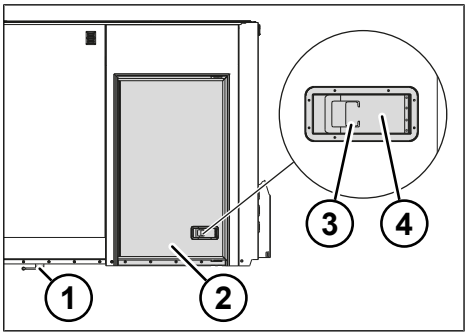


Fig. 6-17: Side door

1 Door stop
2 Side door
3 Lock
4 Lock lever

- ► Push in the lock of the door lock.
- ► Swivel out the lock lever a bit.
- ► If there is no noticeable cargo pressure, completely open the door lock.
- ► Open the door leaf.

- ► Swivel the door lock lever back to the original position and engage it.
- ► Fasten the side door with the door stop.
- ✓ The side door is opened and fastened.

Closing the side door

- ► Release the door leaf from the door stop.
- ► Pay attention to obstacles in the cargo that can damage the seals.
- ► Close the door leaf.
- ► Firmly press the door lock lever so that the lock engages.
- ► If applicable, fold down the protective cover for the lock and close the lock.
- ► Close the opened protective cover for the lock again.
- ✓ The side door is closed.

6.3 Internal lighting

For internal lighting, KRONE Dry Liners are equipped with ceiling lights and a working light. The light switches are mounted below the superstructure, on the transverse beam behind the folding extension ladder.

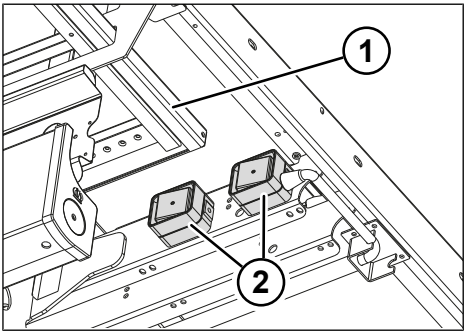


Fig. 6-18: Switch on the chassis

1 Folding telescopic ladder
2 Switch for ceiling lights and working light

Switching on the ceiling lights

- ► Press the switch.
- ► The ceiling lights are switched on.

Switching off the ceiling lights

- ► Press the switch.
- ► The ceiling lights are switched off.

Switching on the working light

- ► Press the switch.
- ► The working light is switched on.

Switching off the working light

- ► Press the switch.
- ► The working light is switched off.

6.4 Folding second loading level

⚠ CAUTION

Risk of accident when operating the second loading level!

Improper operation of the second loading level can cause the tables to fold down uncontrollably and injure people as well as damage the cargo.

- ► Before loading the trailer with a forklift, fold up the tables.
- ► After folding up the tables, engage the locking mechanism.
- ► Insert the landing leg feet properly in the lock in the floor.
- ► Observe the permitted load of max. 400 kg/m².

Depending on their design, KRONE trailers can be equipped with a second folding loading level. This loading level consists of folding tables, which can be folded down on both sides if necessary to create a second loading level in the load compartment.

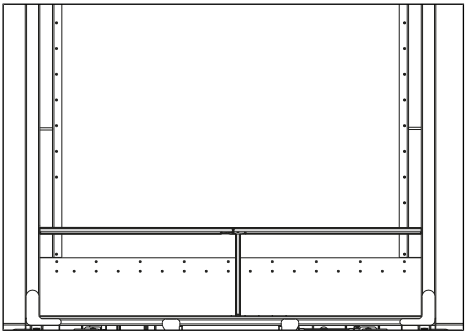


Fig. 6-19: Second loading level

Depending on the equipment, the tables are secured with a spring catch or fall protection.

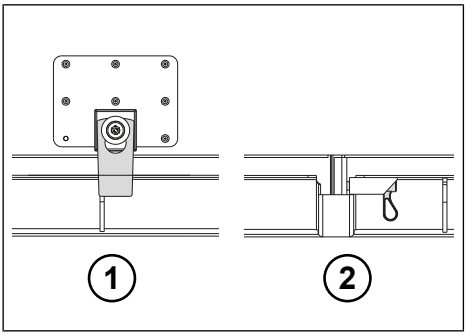


Fig. 6-20: Lock

1 Fall protection
2 Spring catch

The landing leg feet are locked in the floor of the load compartment. In doing so, pay attention to the correct position of the landing leg feet:

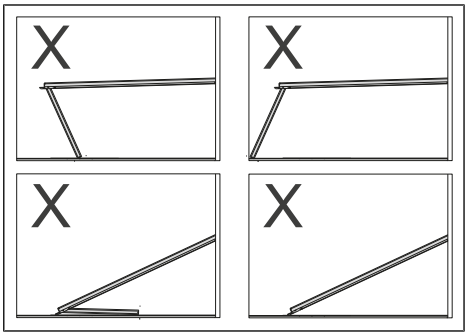


Fig. 6-21: Incorrectly positioned landing leg foot

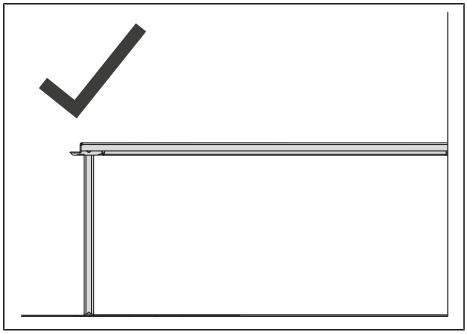


Fig. 6-22: Correctly positioned landing leg foot

The permitted load on the second loading level is 400 kg/m².

Folding down the second loading level

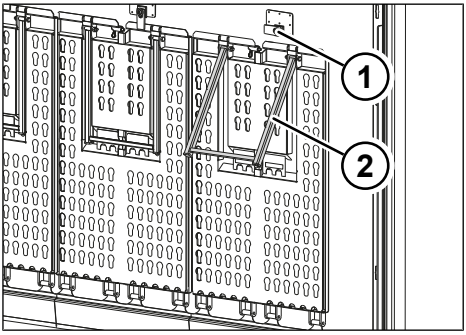


Fig. 6-23: Releasing the landing leg foot

1 Fall protection
2 Landing leg foot

► Release the landing leg foot.
► Release the fall protection / spring catch *(see "Fig. 6-20: Lock", pg. 64)*.
► Fold down the table with the landing leg foot.

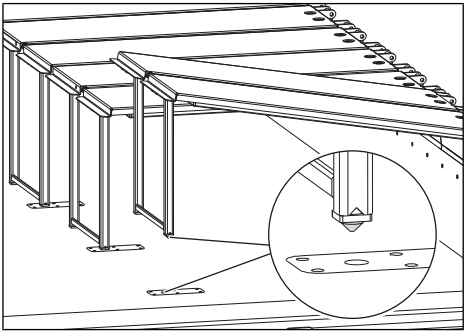


Fig. 6-24: Landing leg foot positioning aid

► Properly lock the landing leg foot in the floor. Pay attention to the correct position of the landing leg foot *(see "Fig. 6-22: Correctly positioned landing leg foot", pg. 64)*.
► Release the fall protection / spring catch of the opposite table.

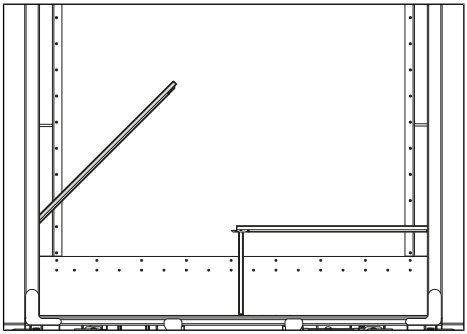


Fig. 6-25: Folding down the table without the landing leg foot

► Fold down the table.
  ⇨ The table is resting on the table that is already folded down.
► Repeat the steps for all tables.
✓ The second loading level in folded down.

Folding up the tables

► Fold up the table without the landing leg foot. In doing so, pay attention to small parts on the table that could damage the outer wall when folding up.
► Lock the table with the fall protection / spring catch.
► Repeat the steps for all tables without landing leg foot.
► Fold up the table with the landing leg foot.
► Lock the table with the fall protection / spring catch.
► Fasten the landing leg foot on the table.
► Repeat the steps for all tables with landing leg foot.
✓ The second loading level in folded up.

6.5 Sliding vent

NOTE

Material damage due to blocked air vents!

When the air vents are blocked, air cannot circulate in the load compartment. Under unfavourable conditions, this can cause damage to the cargo.

► Do not block the air vents with cargo or aids.

There are air vents in each corner of the load compartment for ventilation. As an option, KRONE superstructures can also be equipped with sliding vents.

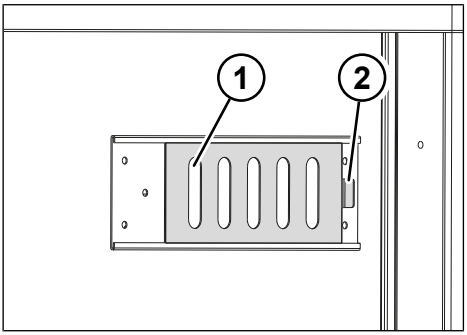


Fig. 6-26: Sliding vent

1 Opening slit
2 Sliding plate

Opening the sliding vent

► Push the sliding plate to the side until the opening slits are lined up.

✓ The sliding vent is open.

Closing the sliding vent

► Push the sliding plate to the side until the opening slits are no longer lined up.

✓ The sliding vent is closed.

6.6 Heaters

Safety precautions

► Do not operate heaters inside closed rooms.

► Do not operate heaters where flammable vapours or dust can from, e.g. close to a fuel depot, coal depot, wood yard, grain warehouse.

► Switch off heaters when refuelling.

Also observe the enclosed supplier documentation.

The heater is installed on the front side of the box body superstructure or under the chassis. Heaters from different manufacturers can be installed ex-factory. Information for using the heater can be found in the operating instructions supplied by the respective manufacturer.

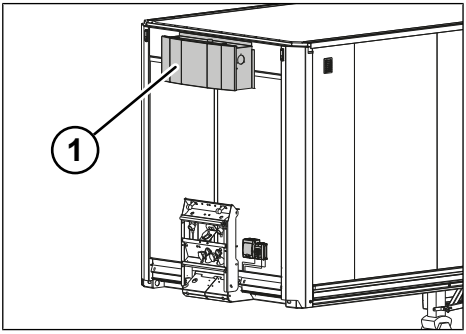


Fig. 6-27: Heater (example)

1 Heater

7 Road operations

7.1 Commissioning before each trip

Commissioning before each trip ensures road safety and includes a check by the driver before driving off and after loading and unloading.

Perform a departure check prior to starting each trip:

- ○ Are the documents for the tractor unit and trailer at hand?
- ○ Are the tractor and trailer in the combination suitable for the transport task?
- ○ Is there sufficient clearance between the vehicles so that the connection lines are not functionally impaired and can move freely?
- ○ Are the applicable regulations for driving on public roads observed with the transport tasks?
- ○ Have all accident prevention regulations been complied with?
- ○ Are all the supply and control connections properly made between the tractor and the trailer?
- ○ Is the semitrailer coupling locked and secured correctly?
- ○ Has the functional test of the EBS brake system been audibly heard?
- ○ Are all the vehicle components (such as wheel chocks, storage boxes, landing leg winches) present, properly fastened, or respectively closed and secured?
- ○ Are all movable collision protections locked and secured?
- ○ Is the load properly distributed and correctly secured?
- ○ Has the permitted maximum total weight been adhered to?
- ○ Is there sufficient clearance between the vehicle floor and the tyres?
- ○ Is the air suspension in the driving position?
- ○ Is the permitted vehicle height complied with?
- ○ Are lighting and signalling systems fully operational?
- ○ Are the tyres inflated to the correct pressure?
- ○ Has the trailer's parking brake been disengaged?
- ○ Is the compressed air supply for the trailer's brakes sufficient?
- ○ Are the landing leg winches retracted and secured?
- ○ Are the compressed air tanks drained?
- ○ Does the warning lamp/warning display in the tractor indicate that the trailer's braking system is error free?

► Fix any observed defects.

► Only drive the tractor unit and trailer when road safety is ensured.

7.2 Coupling and uncoupling the trailer

⚠ DANGER

Danger to life due to crushing!

People can be crushed between the tractor and trailer when coupling and uncoupling.

► Instruct persons to leave the danger area between tractor unit and trailer.

► Ensure that any guide person present stays far enough away to the side from the vehicles.

NOTE

Material damage due to improper coupling and uncoupling

Improper coupling and uncoupling can cause damage to the vehicle.

- ► Prior to coupling and uncoupling, use the landing leg winches to adjust the trailer to the required coupling or uncoupling height of the tractor unit.
- ► When coupling or uncoupling, also observe the instructions from the tractor's operating instructions.
- ► Ensure sufficient clearance of all components.

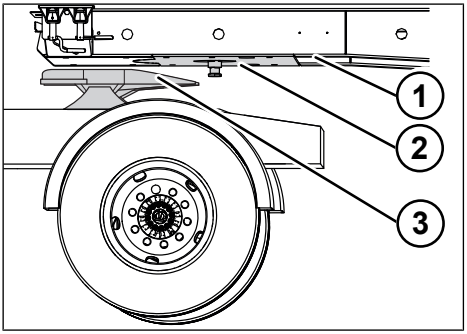


Fig. 7-1: Coupling

1 Semitrailer plate
2 Kingpin
3 Semitrailer coupling

Coupling

- ► Before coupling, check:
  - ○ Is the tractor unit's coupling load suitable for the trailer?
  - ○ Do the semitrailer coupling and the kingpin match?
  - ○ Does the coupling height of the tractor and trailer correspond?
  - ○ Is the trailer correctly loaded?
  - ○ Is the coupling plate sufficiently lubricated?
- ► Apply the parking brake on the trailer *(see "5.6.2 Parking brake", pg. 33)*.
- ► Use the wheel chocks to prevent the trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.
- ► Check the attachment and wear of the kingpin.
- ► Set the height of the semitrailer coupling using the tractor unit's air suspension. The coupling plate must be approx. 50 mm higher than the coupling plate.
- ► Prepare and unlock the semitrailer coupling on the tractor unit.
- ► Drive the tractor unit toward the centre until it is approx. 30 cm away from the kingpin.
- ► Raise the tractor unit's air suspension until the coupling plate and the semitrailer plate touch. Do **not** raise the semitrailer in doing so!
- ► Continue to drive the tractor centrally until the lock engages with the semitrailer coupling.
- ► Put the tractor unit's air suspension in the driving position.
- ► Perform the start-up test in low gear.
- ► Apply the parking brake on the tractor unit.
- ► Perform a visual inspection:
  - ○ The semitrailer plate must lie against the semitrailer coupling without an air gap.
  - ○ The semitrailer coupling must have locked properly.
- ► Secure the semitrailer coupling with its securing device.
- ► Connect the supply and control lines *(see "5.4 Supply and control connections", pg. 28)*.
- ► Retract the landing leg winches *(see "5.2 Landing leg winches", pg. 21)*.
- ► Put the trailer's air suspension in the driving position *(see "5.7 Air suspension", pg. 36)*.

- ► Remove the wheel chocks and properly secure them *(see "5.1 Using wheel chocks", pg. 20)*.
- ► Disengage the parking brake on the trailer *(see "5.6.2 Parking brake", pg. 33)*.
- ► Check for clearance:

Clearance	Requirement
Bending angle to the left and the right	Max. 90°
Tilt angle	Max. 6° to the front, max. 7° to the rear
Swing radius	There must be sufficient distance between the rear wall of the driver's cab on the tractor and the trailer. The two vehicles should not come into contact when turning a corner.
Supply lines	The supply lines must hang freely. They may not hang too low and rub, nor be pulled too tight when cornering.

- ► Carry out a departure check *(see "7.1 Commissioning before each trip", pg. 67)*.
- ✓ The trailer is coupled and ready to drive.

Uncoupling

- ► Lower the trailer's air suspension down to the mechanical limit *(see "5.7 Air suspension", pg. 36)*.
- ► Park the trailer on a load-bearing and level surface.
- ► Position the semitrailer as stretched as possible.
- ► Apply the parking brake on the trailer *(see "5.6.2 Parking brake", pg. 33)*.
- ► Use the wheel chocks to prevent the trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.
- ► Lift the trailer with the tractor unit's air suspension.
- ► Support the trailer with the landing leg winches *(see "5.2 Landing leg winches", pg. 21)*.
- ► Set the tractor ignition to "Off". As a result, the electronic systems of the trailer are properly shut down.
- ► Disconnect the supply and control lines *(see "5.4 Supply and control connections", pg. 28)*.
- ► To compensate for the length of the overall combination, briefly release the parking brake on the trailer.
- ► Prepare and unlock the semitrailer coupling on the tractor unit.
- ► Observe the operating instructions for the tractor unit and the semitrailer coupling.
- ► Slowly drive the tractor unit out by approx. 30 cm.
- ► Lower the tractor unit's air suspension by 5 - 10 cm.
- ► Fully drive the tractor unit out.
- ► If necessary, lower the lift axle.
- ✓ The trailer is uncoupled.
- ► After uncoupling, set the air suspension of the tractor unit to the driving position.

7.3 Manoeuvring the trailer without a connected compressed air supply

INFO
Manoeuvring without a connected compressed air supply is only permissible in exceptional cases.

To manoeuvre the trailer without a connected compressed air supply, the service brake *(see "5.6.1 Service brake", pg. 33)* must be released.

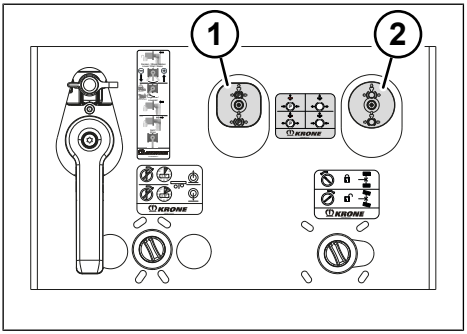


Fig. 7-2: Control unit for brake system

1 Red control knob for the parking brake
2 Black control knob for the service brake

☑ The trailer's compressed air supply is not connected.
► Press in the black control knob for the service brake.
► Press in the red control knob for the parking brake *(see "5.6.2 Parking brake", pg. 33)*.
► The trailer brake is released.
✓ The trailer can be manoeuvred.
► Pull out the black control knob for the service brake again after manoeuvring.
► Pull out the red control knob for the parking brake.
✓ The trailer brake is engaged.

7.4 Parking the trailer safely

⚠ WARNING

Risk of accident due to instability and rolling away!

Unintentional trailer movements can cause serious injury and property damage.

► Park the trailer on a solid surface to avoid sinking in or tipping.
► Align the tractor unit and trailer behind each other in a straight line.
► Secure the trailer against rolling away by applying the parking brake.
► Use the wheel chocks to prevent the trailer from rolling away.
► Load and unload the trailer such that traffic hazards are ruled out.
► Be mindful of the trailer's stability when loading and unloading while uncoupled. If necessary, use additional supports.

INFO

Desired ramp adaptation can be obtained only in coupled (saddled) state, with added compressed air. If rear braces have been factory-fitted to the rear of the trailer, adjust these according to the height of the ramp.

► Drive the trailer onto firm and level ground.
► Apply the parking brake *(see "5.6.2 Parking brake", pg. 33)*.
► Use wheel chocks to prevent the trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.
► Extend the landing leg winches *(see "5.2 Landing leg winches", pg. 21)*.
► Extend the rear braces, if present *(see "5.3 Rear braces", pg. 23)*.
► Disconnect the supply and control connections *(see "5.4 Supply and control connections", pg. 28)*.

- ► Uncouple the trailer from the tractor unit *(see "7.2 Coupling and uncoupling the trailer", pg. 67)*.
- ► For longer parking periods and when loading the ramp while parked, lower the air suspension *(see "5.7 Air suspension", pg. 36)*.
- ✓ The trailer is safety parked.

7.5 Loading the trailer

7.5.1 Loading onto railway wagons

This section will describe the process for **unaccompanied** combined transport (UCT) via handling by crane (grip edges on the trailer).

⚠ WARNING

Risk of accident when driving with the rear underrun protection folded up!

Driving with the rear underrun protection folded up is not permitted by law. In a collision, other motorists can drive under the vehicle and be fatally injured.

- ► Only drive with the rear underrun protection properly folded down and locked in place.

⚠ WARNING

Risk of accident when driving with the side collision protection folded up!

Driving with the side collision protection folded up is not permitted by law. In a collision, other motorists can get below the trailer and be fatally injured.

- ► Only drive with the side collision protection folded down and locked in place on both sides.

INFO

After uncoupling the brake lines, close off the coupling heads and the connection sockets for the electrical cables/power to prevent contamination.

Inspection before loading

- ► Ensure that the trailer is in proper and operationally safe condition.
- ► Check the crane pockets and their connection.
- ► Ensure that the vehicle load is evenly distributed.
- ► Observe the braced load limitation on the type plate of the landing leg winches.
- ► Ensure that the load is properly secured.
- ► Ensure that the coding signs, warning signs, and ILU codes are on the vehicle.

7.5.2 Loading onto ships

This section will describe the process for **unaccompanied** transport in ferry operations.

Inspection before loading

- ► Ensure that the trailer is in proper and operationally safe condition.
- ► Check the ferry rings and their connection.
- ► Ensure that the vehicle load is evenly distributed.
- ► Observe the braced load limitation on the type plate of the parking braces.
- ► Ensure that the load is properly secured.
- ► Ensure that the warning signs for ferry operations are on the vehicle.

Before loading

- ► Drive the trailer into the area indicated by the terminal operator.
- ► Shortly before reaching the parking position, fully vent the trailer using the control device *(see "5.7 Air suspension", pg. 36)*. Do not allow the trailer to have any residual pressure in the air spring bellows.
- ► Slowly manoeuvre to the parking spot.

- ► Fold up the rear underrun protection if the underrun protection can be folded up and locked or hung up with a chain *(see "5.12 Rear underrun protection", pg. 41)*.
- ► If necessary, unlock, fold up, and lock the side collision protection on both sides *(see "5.13 Side collision protection", pg. 43)*.
- ► If necessary, fold up and lock the foldable bracing devices on both sides.
- ► Wind down the landing leg winch until the trailer is supported *(see "5.2 Landing leg winches", pg. 21)*.
- ► Disconnect the supply and control lines and seal them properly *(see "5.4 Supply and control connections", pg. 28)*.
- ► Uncouple the trailer *(see "7.2 Coupling and uncoupling the trailer", pg. 67)*.
- ► Apply the parking brake on the control knob *(see "5.6.2 Parking brake", pg. 33)*.
- ► Use the wheel chocks to prevent the trailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.
- ✓ The trailer is ready to be loaded onto the ferry.

Driving the trailer onto the ferry

The following activities involve the port personnel:

- ► Remove the wheel chocks and secure them in their designated parking positions *(see "5.1 Using wheel chocks", pg. 20)*.
- ► Couple the trailer with the port tractor unit *(see "7.2 Coupling and uncoupling the trailer", pg. 67)*.
- ► Release the parking brake on the control knob *(see "5.6.2 Parking brake", pg. 33)*.

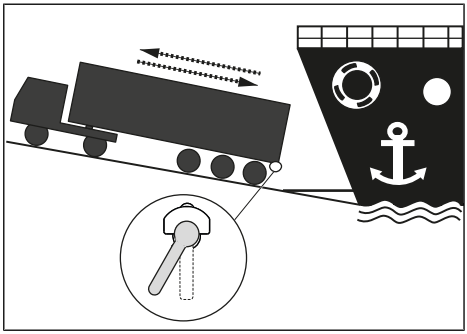


Fig. 7-3: Driving the trailer onto the ferry

- ► Connect the supply and control lines *(see "5.4 Supply and control connections", pg. 28)*.
- ► Drive the trailer to its designated parking space on the ferry.
- ► Slide a trestle behind the king pin (observe the marking on the trailer).
- ► Lower the trailer onto the trestle and unhitch.
- ► Disconnect the supply and control lines and seal them properly.
- ► Ensure that the trailer is completely vented. Vent, if necessary.
- ► Wedge the trailer on the rear axle.
- ► Apply the parking brake on the control knob.

⚠ WARNING

Risk of accident due to improperly lashing the trailer!

Improper lashing can cause the trailer to break free from the ship, cause accidents, and injure people.

- ► Fully lower the trailer using the air suspension's control device before lashing.

- ► Lash the trailer onto the ship's deck via the four pairs of ferry rings with lashing chains and tensioning elements.
- ✓ The trailer is loaded onto the ferry.

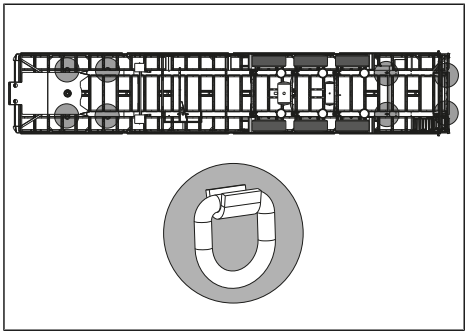


Fig. 7-4: Arrangement of the ferry rings

Driving the trailer off the ferry

The following activities involve the port personnel:

- ► Release and remove the lashing on the four pairs of ferry rings.
- ► Couple the trailer with the port tractor unit *(see "7.2 Coupling and uncoupling the trailer", pg. 67)*.
- ► Connect the supply and control lines *(see "5.4 Supply and control connections", pg. 28)*.
- ► Lift the trailer by the kingpin and remove the trestle.
- ► Remove the wedging on the rear axle.
- ► Release the parking brake on the control knob *(see "5.6.2 Parking brake", pg. 33)*.
- ► Drive the trailer from the ferry to the parking space on the port.

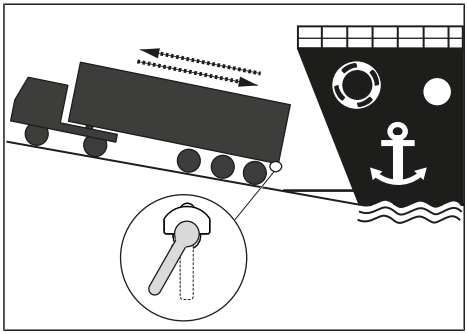


Fig. 7-5: Driving the trailer off the ferry

- ► Disconnect the supply and control lines and seal them properly.
- ► Uncouple the trailer.
- ► Apply the parking brake on the control knob.
- ► Use the wheel chocks to prevent the semitrailer from rolling away *(see "5.1 Using wheel chocks", pg. 20)*.
- ✓ The trailer is parked in the parking space.

Picking up the trailer from the parking space

- ► Remove the wheel chocks and secure them in their designated parking positions *(see "5.1 Using wheel chocks", pg. 20)*.
- ► Wind down the landing leg winch until the trailer can be coupled *(see "5.2 Landing leg winches", pg. 21)*.
- ► Put the air spring valve's control lever in the driving position *(see "5.7 Air suspension", pg. 36)*.

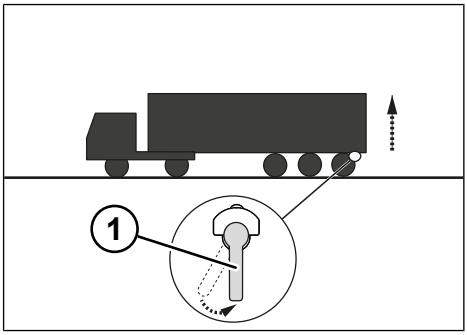


Fig. 7-6: Place the trailer in the driving position

1 Control lever in the “driving position”

- ► Couple the trailer *(see "7.2 Coupling and uncoupling the trailer", pg. 67)*.
- ► Connect the supply and control lines *(see "5.4 Supply and control connections", pg. 28)*.
- ► Fully retract the landing leg winch again for road use.

- ► Remove any wrinkles in the bellows by repeatedly lifting and lowering the trailer.
- ► Unlock, fold down, and lock the underrun protection *(see "5.12 Rear underrun protection", pg. 41)*.
- ► If necessary, unlock, fold down and relock the side collision protection *(see "5.13 Side collision protection", pg. 43)*.
- ► Hang down the mud flaps, if necessary *(see "5.15 Mud flap", pg. 46)*.
- ► Check if the semitrailer is in operationally safe condition and has not suffered any damage due to ferry transport.
- ✓ The trailer is ready for road use.

8 Loading and securing

⚠ WARNING

Risk of accident due to instability and rolling away!

Unintentional trailer movements can cause serious injury and property damage.

- ► Secure the trailer against rolling away by applying the parking brake.
- ► Use the wheel chocks to prevent the trailer from rolling away.
- ► Park the trailer on a solid surface to avoid sinking in or tipping.
- ► Align the tractor unit and trailer behind each other in a straight line.
- ► Load and unload the trailer such that traffic hazards are ruled out.
- ► Be mindful of the trailer's stability when loading and unloading while uncoupled. If necessary, use additional supports.

⚠ WARNING

Risk of accident due to overloaded trailer!

Driving with an overloaded trailer can result in serious accidents with personal injury and material damage to the tractor and the trailer.

- ► Evenly distribute the load.
- ► Observe the legally permitted values for the total weight as well as axle and fifth-wheel loads.
- ► Observe the trailer's maximum permitted axle loads. In case of doubt, have the axle loads checked at a suitable weighing station.
- ► Comply with current national and international regulations on load securing.

⚠ WARNING

Risk of accident caused by incorrect loading and unloading!

Incorrect loading and unloading of the load can result in accidents with personal injury and material damage.

- ► Evenly load and unload the trailer. The centre of gravity must lie on the trailer's longitudinal centre line.
- ► Distribute the load as low as possible on the load compartment floor.
- ► Observe the permissible total weight, permissible axle and fifth-wheel loads along with the maximum height.
- ► Ensure that the cargo can withstand the loads from stacking, transport, and the load securing system.

⚠ WARNING

Risk of accident caused by sliding and tipping loads!

When driving, slipping or tipping of the load can result in personal injury and damage to property.

- ► Secure the load with suitable means to prevent it from sliding and tipping.

⚠ CAUTION

Risk of accident due to improper securing of the load!

Improper securing of the load can result in accidents with personal injury and material damage.

- ► Secure the load with lashing material.
- ► Do not nail the cargo to the load compartment.

NOTE

Material damage due to trailer rebound during unloading!

When the trailer is unloaded, the suspension decompresses. As a result, headroom heights may then be insufficient.

► When unloading trailers in underpasses or in factory halls, observe the headroom.

NOTE

Material damage when loading and unloading with forklifts!

Loading and unloading with a forklift can exceed the bearing capacity of the load compartment floor and result in material damage.

► Observe the permissible working load limit of the load compartment floor.

► Observe the permissible inner dimensions of the load compartment with a loaded forklift.

NOTE

Material damage to floor due to improper loading!

On trailers with an anti-slip coating (Trailer Safety Floor), loads sliding across the floor can cause material damage due to excess wear.

► Do not slide the load across the floor.

► Lift the load to move it.

NOTE

Material damage due to blocked air vents!

When the air vents are blocked, air cannot circulate in the load compartment. Under unfavourable conditions, this can cause damage to the cargo.

► Do not block the air vents with cargo or aids.

INFO

The axle loads can vary due to the various loading conditions of the trailer. Information on the permitted axle loads can be obtained either from the type plate or the vehicle documents.

INFO

Keep the inspection booklet in the vehicle as proof of the validity of the load securing certificate. The inspection booklet serves as proof of the trailer's maintenance condition and can be downloaded from the download section at www.krone-trailer.com.

The required securing is partially achieved through friction between the load and the load compartment. A rough load on a rough load compartment reduces the need for additional securing equipment.

However, even with high friction values, securing the load is essential. When driving, trailers and the load can start vibrating, which reduces or eliminates the friction.

For loading and unloading, the trailer must be

- coupled and secured, or
- uncoupled and supported.

8.1 Ensuring form-fitting

NOTE

Material damage caused by empty spaces in the cargo area!

Empty spaces between parts of the cargo can result in material damage to the load while driving.

- ► Eliminate any empty space towards the cargo space limiters.
- ► Eliminate any empty space between individual pieces of cargo.
- ► Comply with the permissible axle load when eliminating empty spaces.
- ► Fill empty spaces for example with wooden pallets, storage pads or air cushions.
- ► Fill stowage gaps in the middle with packs of wood chip for example.
- ► Secure the load, e.g. by lashing it down.

Flush loading and form-fitting makes load securing easier. Form-fitting load securing means that the load fills the space between the load compartment limiters at the front, side, and rear wall.

8.2 Using straps

⚠ CAUTION

Risk of accident caused by incorrect use of straps!

When the cargo shifts while driving, e.g. due to vibrations, strapping can lose its tension and become loose. Incorrect securing of the load can result in accidents with personal injury and material damage.

- ► Apply down-strapping to the support points of the cargo.

NOTE

Material damage caused by incorrect use of straps!

Incorrect use of lashing belts, chains or wire ropes can result in material damage to the cargo.

- ► Only load lashing equipment at the maximum permitted values.
- ► Immediately replace defective or damaged straps.
- ► Have repairs on straps carried out by qualified staff.
- ► Never tension straps and ratchets over sharp edges.
- ► Do not use straps to lift cargo.
- ► Do not place any cargo on the straps.
- ► Do not twist or knot the straps.
- ► Do not use ratchet extensions, except on heavy-duty ratchets designed for this purpose.

NOTE

Material damage caused by uneven tension force!

If the load is strapped down unevenly and/or the lashing down is done with large clamping forces, this can result in material damage.

- ► Ensure that the pre-tension force is evenly distributed on both sides of the load.
- ► Apply the ratchets on alternate sides when using tie-down lashing.
- ► For pressure-sensitive cargo (e.g. beverage crates) that cannot be subjected to high securing forces, use large-sized angular rails. This allows higher pre-tension forces to be applied without damaging the cargo.

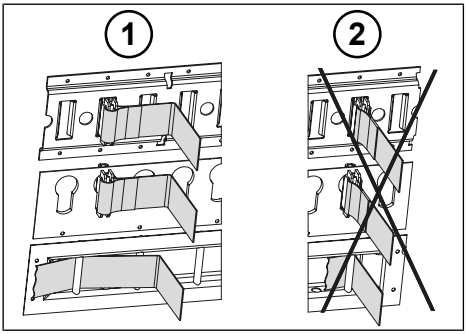


Fig. 8-1: Using tension straps

1 Correctly attached tension straps
2 Incorrectly attached tension straps

Tie-down lashing, angular lashing, and diagonal lashing can be achieved with lashing material such as lashing belts, lashing chains, and lashing cables.

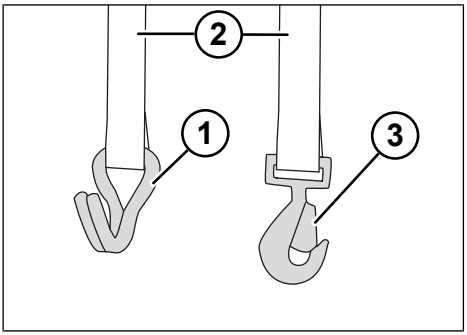


Fig. 8-2: Lashing material

1 Wire hook
2 Lashing belts
3 Flat hook

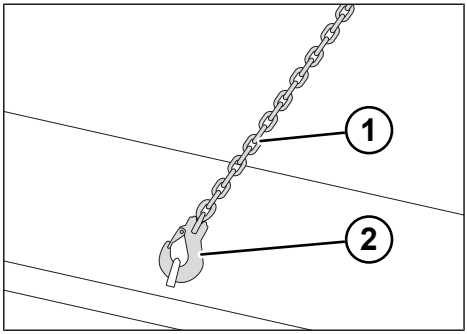


Fig. 8-3: Lashing chain with load hook

1 Lashing chain
2 Load hook

Wire hooks, flat hooks, and load hooks can be used to fasten the straps.

With tie-down lashing, the securing effect is achieved by increasing the pressure against the load compartment. Angled and diagonal lashing prevents non-stable loads from tipping over.

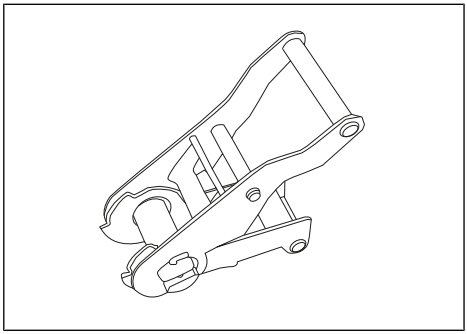


Fig. 8-4: Strap ratchet

The straps are tensioned using suitable clamping devices, such as strap ratchets or lashing strap winches.

Lashing down the load

► Attach the hooks on the lashing belts or lashing chains to the opening on the lashing rail.

► Move the lashing belts to the required position and allow them to engage

► Tighten the lashing belts.
✓ The load is lashed down.

8.3 Operating the lashing rings

To secure the load with straps, the lashing rings can be recessed in the wall (scouring strip) or embedded in the floor, depending on the equipment.

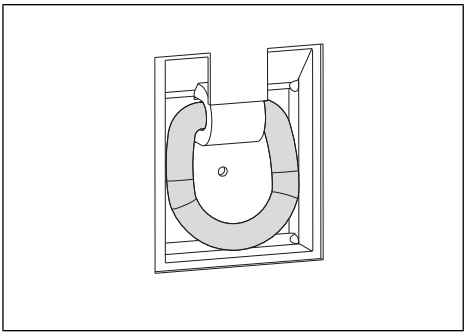


Fig. 8-5: Lashing ring

8.4 Load securing rail

KRONE trailers can be equipped with load securing rails.

Load securing rails are used to attach tension straps, locking rods, and locking bars.

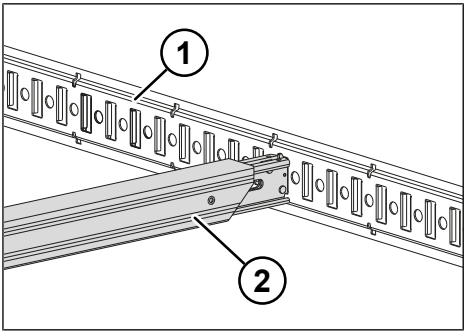


Fig. 8-6: Load securing rails with locking bars

1 Load securing rail
2 Locking bars

The following versions are available:

○ Combination lashing rail
○ Rod lashing rails

8.5 Keyhole plates

KRONE trailers can be equipped with keyhole plates. Keyhole plates are used to attach locking rods, locking bars, clothes rails, strap nets, and tension straps *(see "8.8 Clothes rail transport", pg. 81)*.

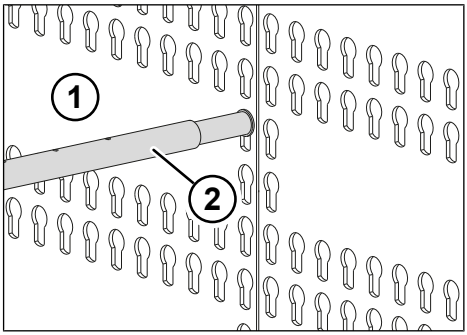


Fig. 8-7: Locking rod keyhole plate

1 Keyhole plate
2 Locking rod

8.6 Locking rods

The load is secured against sliding with locking rods. The locking rods are equipped with spring-loaded sliding blocks and are attached at the required position on the load securing rails *(see "8.4 Load securing rail", pg. 79)*.

⚠ CAUTION

Risk of accident due to overloading!

The maximum load is specified on the bearing elements.

► Never exceed the maximum load.

The locking rods can also be inserted in the keyhole plates *(see "8.5 Keyhole plates", pg. 79)*.

Combination lashing rail

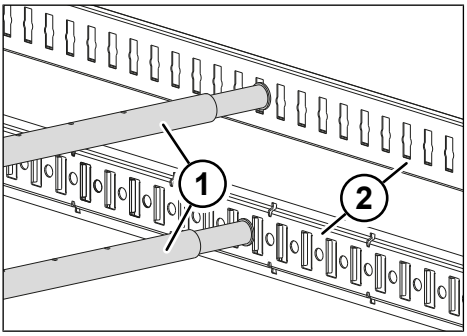


Fig. 8-8: Locking rods combination lashing rail

1 Locking rods
2 Combination lashing rail

Inserting the locking rod

► Insert the locking rod in the desired position of the load securing rail.
► Push the locking rod together and insert in the opposite side of the load securing rail.
✓ The locking rod has been inserted.

Removing the locking rod

► Push the locking rod together and pull it out of the load securing rail on the opposite side.
► Remove the locking rod.
► Store the locking rod safely.
✓ The locking rod has been removed and safely stored.

Rod lashing rail

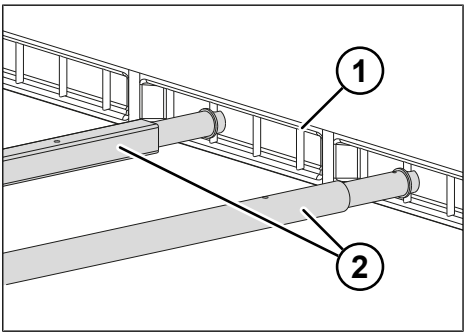


Fig. 8-9: Locking rods rod lashing rail

1 Rod lashing rail
2 Locking rods

Inserting the locking rod

► Insert the locking rod in the desired position on the rods of the load securing rail.
► Push the locking rod together and insert it in the the rods of the load securing rail in the opposite position.
✓ The locking rod has been inserted.

Removing the locking rod

► Push the locking rod together and pull it out of the load securing rail on the opposite side.
► Remove the locking rod.
► Safely store the locking rod
✓ The locking rod has been removed and safely stored.

8.7 Locking bars

The load is secured against sliding with locking bars. The locking bars are inserted in the required position in the load securing rail *(see "8.4 Load securing rail", pg. 79)*.

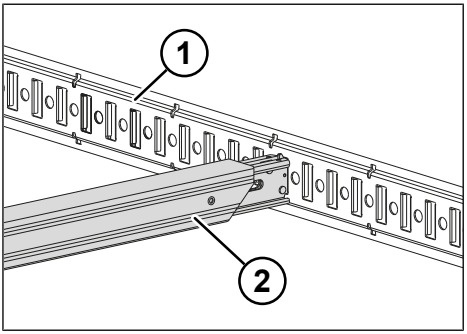


Fig. 8-10: Locking bars

1 Load securing rail
2 Locking bars

⚠ CAUTION

Risk of accident due to overloading!

The maximum load is specified on the bearing elements.

► Never exceed the maximum load.

Inserting the locking bar

► Insert one side of the locking bar in the desired position in the load securing rail.
► Insert the locking bar in the opposite position in the load securing rail.
✓ The locking bar has been inserted.

Removing the locking bar

► Lift up the retainer lever.
► Remove the locking bar.
► Store the locking bar safely.
✓ The locking bar has been removed.

Locking bar for keyhole plates

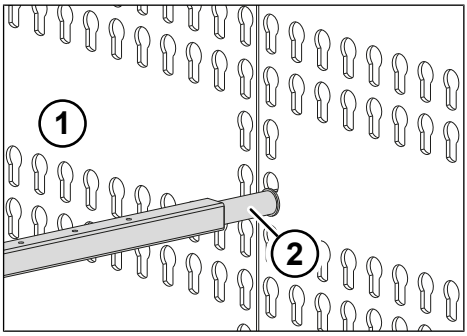


Fig. 8-11: Locking bar keyhole plate

1 Keyhole plate
2 Locking bars

Removing the locking bar

► Insert the locking bar in the desired position of the keyhole plate.
► Push the locking bar down on one side.
► Insert the locking bar in the opposite position of the keyhole plate.
► Push the locking bar down on one side.
✓ The locking bar has been inserted and secured against twisting.

Removing the locking bar

► Push the locking bar upwards.
► Pull the locking bar out of the keyhole plate on the opposite side.
► Remove the locking bar.
► Store the locking bar safely.
✓ The locking bar has been removed.

8.8 Clothes rail transport

For the transport of clothing, clothes rails are inserted in the side walls with keyhole plates. Clothes rails that are not required

can be stored in the clothes rail depot. The depot can positioned on the side horizontally or vertically as well as under the roof.

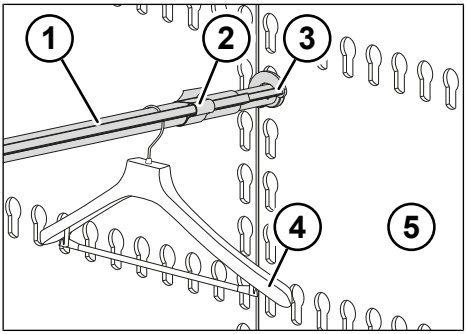


Fig. 8-12: Clothes rails

1 Clothes rail
2 Velcro strap
3 Retainer bow
4 Clothes hanger
5 Keyhole plates

Inserting the clothes rails

► Insert the clothes rail in the desired position in the opening of the keyhole plate.
► Push down the clothes rail to lock it.
► Insert the clothes rail at the same height in the opening of the keyhole plate on the opposite side.
► Push down the clothes rail to lock it.
► Remove the Velcro straps and fold down the retainer bow.
► Hang up the clothes hangers.
► Fold down the retainer bow and secure with the Velcro straps.
✓ The clothes rail has been inserted and the clothes hangers have been secured.

Removing the clothes rails

► Remove the Velcro straps and fold down the retainer bow.
► Remove the clothes hangers.
► Fold down the retainer bow and secure with the Velcro straps.
► Push up the clothes rail and remove it from the opening in the keyhole plate on both sides.
✓ The clothes rail has been removed.

Storing the clothes rails in the depot

► Push the clothes rails into the depot on top of each other.
✓ The clothes rails are stored in the depot.

Removing the clothes rails from the depot

► Remove the clothes rails.
✓ The clothes rails have been removed.

8.9 Clamping rails

As an option, KRONE trailers can be equipped with clamping rails.

Clamping rails enable division of the load compartment and positive-locking load securing. Depending on the version, they can be equipped with two rubber feet or with one rubber foot and a pin. The pins can be inserted in a load securing rail *(see "8.4 Load securing rail", pg. 79)* in the roof and/or in the floor.

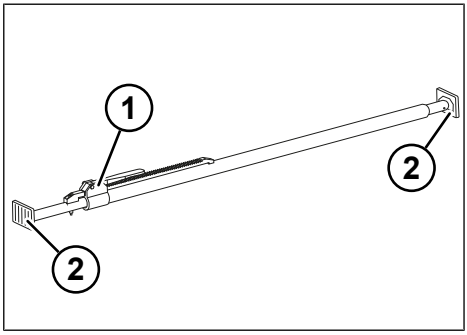


Fig. 8-13: Clamping rail

1 Ratchet
2 Rubber foot

Inserting the clamping rail

► Place the clamping rail in the desired position in the load compartment.

► If applicable, insert the pins for the clamping rail in the desired position of the load securing rail.
► Extend the clamping rail and tension it with the ratchet.
✓ The clamping rail has been inserted.

Removing the clamping rail

► Release the ratchet and push the clamping rail together.
► If applicable, pull the pins of the clamping rail out of the load securing rail.
► Store the clamping rail safely.
✓ The clamping rail has been removed.

8.10 Strap net

Strap nets ensure positive-locking load securing for small load units. They also enable division of the load compartment. A strap net is hooked on using hooks on the right and left in the keyhole plates or in the load securing rail. Depending on the manufacturer, they can bear different loads or have different sizes.

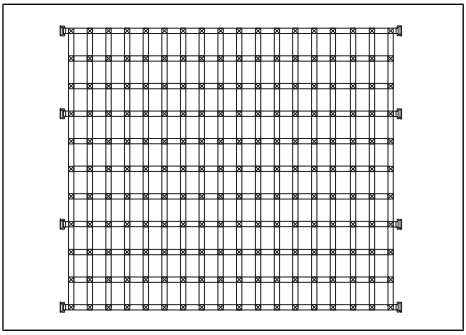


Fig. 8-14: Example of a strap net

8.11 Vario Lock system

KRONE trailers can be equipped with the Vario Lock load securing system.

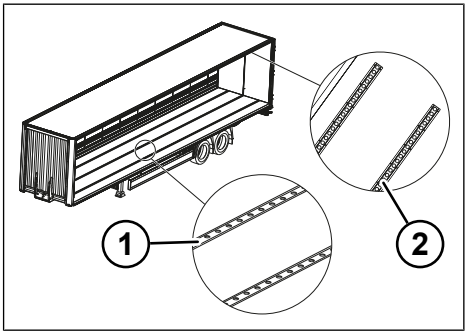


Fig. 8-15: Vario Lock system

1 Perforated rails in the floor
2 Perforated rails in the roof (view from the inside)

The Vario Lock system consists of three perforated rails that are embedded in the floor, and three perforated rails that are installed on the inside of the roof panel.

Round locking bars can be inserted vertically between the perforated rails, which prevent sliding of the load.

This ensures that flower wheeled containers can be transported securely and safely, amongst other things.

8.12 Double-deck loading

Double-deck trailers are equipped with vertical double-deck rails, which enable better use of the existing load compartment volume thanks to multideck loading and the loading of twice as many pallets (full capacity).

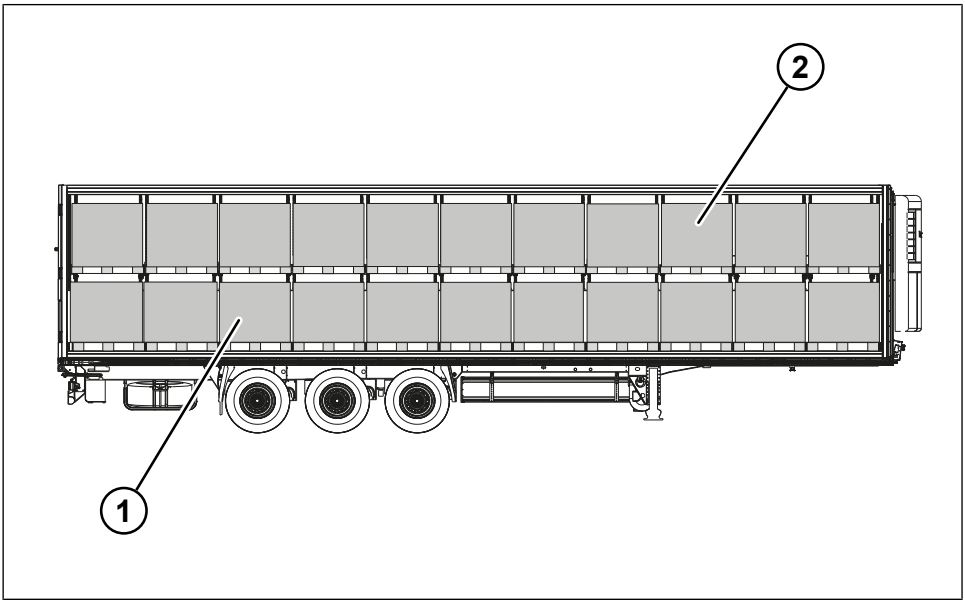


Fig. 8-16: Double-deck superstructure

1 First loading level
2 Second loading level

The double-deck superstructure consists of:

- vertical double-deck rails
- support beams (see sticker on the support beam for the working load limit)
- and a control bar

Depending on the version, the control bar can be embedded in the rear double-deck rail or hooked on. The number of double-deck rails and support beams depends on the vehicle length and the size of the pallets.

Loading instructions:

- ► Do not lash cargo that is on the second loading level to the floor.
- ► A maximum of 50 % of the total payload may be transported on the second loading level. When loading higher, proportionally less load is allowed on the second loading level.
- ► Load heavy pallets on the first loading level and light pallets on the second loading level.
- ► Always start loading at the front wall with positive-locking.
- ► Use support beams, locking bars or lashing belts to secure the load towards the rear.
- ► Put every row of pallets on two support beams. It is not permitted for two rows of pallets to share one support beam.

- ► A stepped arrangement of the support beams in pairs prevents the pallets from sliding on the second loading level and supports load securing.
- ► Only load the support beams when they are aligned horizontally. There are orientation marks in the double-deck rails to help position the support beams horizontally.
- ► Follow the load distribution instructions.

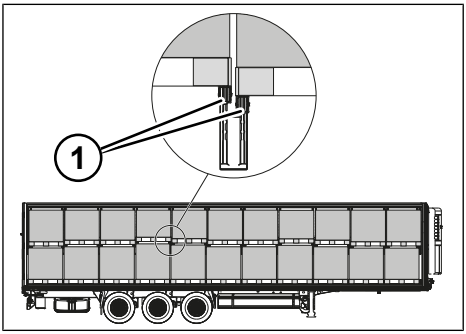


Fig. 8-17: Stepped arrangement of the support beams

1 Support beam

The following load capacities may not be exceeded on the second level:

Bearing element	Max. load capacity
per pallet	660 kg
per support beam	1,000 kg
per double-deck rail pair on the left and right	1,000 kg
Total second loading level	11,000 kg

Inserting support beams

⚠ CAUTION

Risk of accident due to support beams falling down

Support beams falling down can cause personal injury as well as material damage.

- ► Insert the support beams carefully.
- ► Do not allow the support beams to fall.
- ► Do not stand under the support beam when making adjustments.
- ► Wear safety shoes.

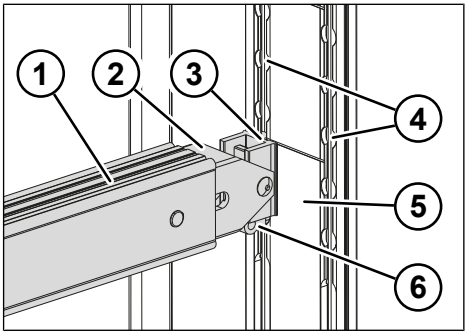


Fig. 8-18: Bearing elements

1 Support beam
2 Telescopic piece
3 Guide block
4 Hole pattern
5 Vertical double-deck rail
6 Unlocking

- ► Insert the support beam into the double-deck rail from below.
- ► Push the support beams gradually, alternating on each side, to the desired height.
- ► Repeat the steps for all other support beams.
- ✓ The support beams have been inserted.

Removing the support beams

- ► Actuate the unlocking mechanism and push down gradually in the guide on both sides.
- ► Take one end of the support beam out of the double-deck rail.
- ► Take out the other end of the support beam in the same way.
- ► Repeat the steps for all other support beams.
- ✓ The support beams have been removed.

Adjusting the height of the support beams

- ► Actuate the unlocking mechanism and push in the guide to the desired height.
- ► Adjust the other end of the support beam to the same height in the same way in the opposite double-deck rail.
- ► Repeat the steps for all other support beams as required.
- ✓ The heights of the support beams have been adjusted.

Support beam storage

During the loading procedure or when the support beams are not needed, they can be pushed under the ceiling (e.g. for loading tall pallet carts or similar).

Operating the pallet retainer

The pallet retainer on the support beam prevents the pallets from slipping. Depending on the equipment, different types of retainers can be installed.

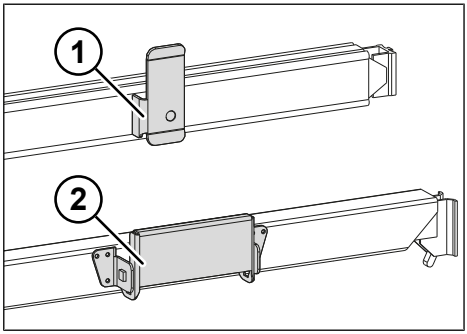


Fig. 8-19: Pallet retainer

1 Catch 1
2 Catch 2

Swivelling up the pallet retainer (Catch 1)

- ► Pull the retainer towards the rear (rear in the direction of travel).
- ► Swivel the retainer upwards.
- ✓ The retainer has been swivelled up.

Swivelling down the pallet retainer (Catch 1)

- ► Pull the retainer towards the rear (rear in the direction of travel).
- ► Swivel the retainer to the side.
- ► The retainer has been swivelled down.

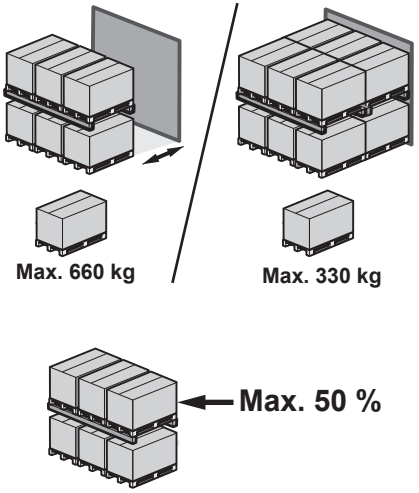
Swivelling up the pallet retainer (Catch 2)

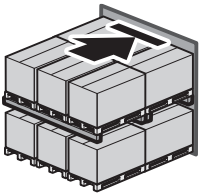
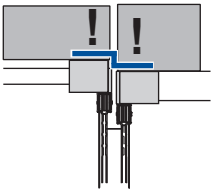
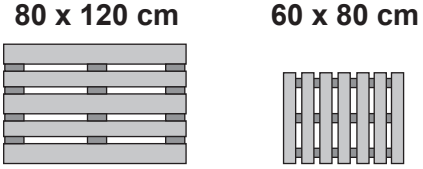
- ► Swivel up the retainer.
- ► Allow the retainer to engage into place.
- ✓ The retainer has been swivelled up.

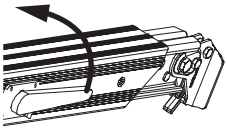
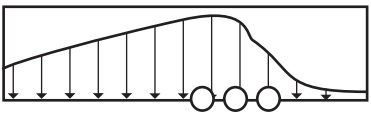
Swivelling down the pallet retainer (Catch 2)

- ► Push up the retainer and swivel it down.
- ✓ The retainer has been swivelled down.

Loading regulations for the second level

<table>
<tr>
<td> 
</td>
<td>Full capacity: Maximum weight 330 kg per pallet
Partial capacity: Maximum weight 660 kg per pallet

Load max. 50 % of the payload on the 2nd loading level at half the superstructure height. When loading higher, proportionally less load is allowed.</td>
</tr>
<tr>
<td>  </td>
<td>For full capacity, always start loading at the front wall with positive-locking. Use support beams, locking bars or lashing belts to secure the load towards the rear.
For partial capacity, position the load according to the load distribution plan. Load securing to the front and rear is required.</td>
</tr>
<tr>
<td>  </td>
<td>Support beams arranged stepped in pairs increase the load security.</td>
</tr>
<tr>
<td> 
</td>
<td>Depending on the rail spacing, use Euro pallets (80 x 120 cm) or Düsseldorf pallets (60 x 80 cm).</td>
</tr>
</table>

	Use pallet retainers if necessary.
	For combined load transport (CLT), ensure that the load is evenly distributed. Observe the load distribution plan for the transport vehicle.

9 Troubleshooting in the event of faults

⚠ WARNING

Risk of accident due to instability and rolling away!

Unintentional trailer movements can cause serious injury and property damage.

- ► Secure the trailer against rolling away by applying the parking brake.
- ► Use the wheel chocks to prevent the trailer from rolling away.
- ► Park the trailer on a solid surface to avoid sinking in or tipping.
- ► When the trailer is unhitched, ensure stability. If necessary, use additional supports.

⚠ WARNING

Risk of accident and material damage caused by improperly performed troubleshooting and repair work!

Improperly performed troubleshooting and repair work affect safety and may lead to serious injuries and property damage.

- ► Only have necessary repair work performed by an authorised specialist workshop.
- ► Only use original spare parts and spare parts authorised by KRONE.
- ► Observe the instructions concerning troubleshooting issued by the suppliers of the installed components.
- ► Verify functionality after installing/repairing components.

The following overview will help to determine possible faults and their causes and to perform measures to eliminate them. In case of faults that cannot be fixed:

- ► Visit an authorised specialist workshop.
- ► Contact the customer service department of Fahrzeugwerk Bernard KRONE GmbH & Co. KG *(see "12.2 Customer service and support", pg. 105)*.

Troubleshooting overview

Fault	Cause	Solution
Electrical components are not working	Supply and control connections are interrupted	► Check that the supply and control connections between the tractor unit and trailers are properly connected.
Pneumatic components are not working	Leaks on components	► Check the components for damage and leaks. ► Have repairs/replacements performed by a specialist workshop.
Brake system fault	Leaks on the brake cylinder, leaks on the brake calliper	► Check the brake cylinders for function and leaks. ► Check the brake callipers for function and leaks. ► Have repairs/replacements performed by a specialist workshop. ► In addition to the operating instructions for the KRONE Trailer Axle, also observe the operating instructions for the tractor unit and the trailer.

Fault	Cause	Solution
Braking abnormalities (trailer and tractor brake abnormally in the vehicle combination)	Failure to perform the brake power/ train tuning	► Perform a brake power/train tuning with the allocated tractor unit *(see "9.2 Fixing braking abnormalities", pg. 90)*. ► In addition to the operating instructions for the KRONE Trailer Axle, also observe the operating instructions for the tractor unit and the trailer.
ABS/EBS error display	Fault in the controller	► Contact an authorised specialist workshop or customer service.
Rear lights, direction indicators, position lamps or similar do not work	Defective bulbs	► Replace the defective bulbs. ► Check that the supply and control connections between the tractor and trailer are properly connected.
The lift axle no longer functions	○ Faults on the lift axle control due to defective lift axle valves ○ Fault due to incorrect controls from the tractor unit	► Check that the supply and control connections between the tractor unit and trailers are properly connected. ► Contact an authorised specialist workshop or customer service.

9.1 Checking the lift axle control

⚠ WARNING

Risk of accident caused by faulty lift axle control!

A faulty lift axle control can have negative effects on the handling characteristics of the trailer. It can also change the vehicle height or the distance from the road and cause the trailer to get stuck in underpasses.

► Only drive with properly functioning lift axle control.

► In case of malfunction, contact an authorised specialist workshop and have the lift axle control repaired.

► In case of faults, have the lift axle control inspected by an authorised specialist workshop.

9.2 Fixing braking abnormalities

⚠ WARNING

Risk of accidents due to incorrect brake tuning!

Incorrect brake tuning between tractor unit and trailer can result in serious accidents.

► If necessary, carry out a brake power/ train tuning to obtain optimum brake balance.

► Observe the reference brake values.

► Pay attention to the sticker on the trailer.

Technically optimised function of the brake system is only possible when trailer is combined with the corresponding allocated tractor unit. All components and the con-

trols must function without faults and be properly set. If braking abnormalities occur, the following apply:

- ► Fill in the following questionnaire for basic information regarding braking abnormalities and send it to KRONE.
- ► More information and instructions can be found on the KRONE website or requested from customer service *(see "12.2 Customer service and support", pg. 105)*.
- ► Observe the operating and maintenance instructions of the installed supplied components.

Questionnaire: Basic information about braking abnormalities

- ► Copy the questionnaire below.
- ► Fill in the questionnaire completely.
- ► Include the following attachments:
  - ○ Logs from the rolling brake test stand
  - ○ Data from the memory of the brake electronics
  - ○ Error memory
  - ○ Operating data
  - ○ If necessary, the data from the internal CPU memory (e.g. EEPROM memory for WABCO systems)

Customer	
Name/company	
Telephone	
Fax	
Email	

Trailer	
Item number	
Vehicle ID number *(see "1.3 Product identification and type plate", pg. 8)*	
New registration	
Trailer mileage	km
Brake pads mileage	km

Tractor unit	
Manufacturer	
Type	
New registration	km
Tractor unit mileage	km
Brake pads mileage	km

► Send the filled form and annexes to:

Fahrzeugwerk Bernard KRONE
GmbH & Co. KG

Customer Service

D-49757 Werlte

email: kd.nfz@krone.de

10 Maintenance and repair

⚠ DANGER

Risk of accident due to unintended vehicle movements!

Unintended vehicle movements can cause serious injury.

- ► Use wheel chocks to prevent the trailer from rolling away.
- ► Park the trailer on solid and level ground to avoid sinking in or tipping.
- ► During maintenance and repair work, observe the stability of the trailer.
- ► Observe the applicable national accident prevention regulations.

⚠ WARNING

Risk of accident and material damage caused by improperly performed troubleshooting and repair work!

Improperly performed troubleshooting and repair work affect safety and may lead to serious injuries and property damage.

- ► Only have necessary repair work performed by an authorised specialist workshop.
- ► Only use original spare parts and spare parts authorised by KRONE.
- ► Observe the instructions concerning troubleshooting issued by the suppliers of the installed components.
- ► Verify functionality after installing/repairing components.

Maintenance and repair serve to maintain the operational readiness and to prevent premature wear. Maintenance is divided into:

- ○ Care and cleaning
- ○ Maintenance
- ○ Repair

10.1 Care and cleaning

NOTE

Material damage caused by incompatible cleaning agent

Incompatible cleaning agents can damage the paintwork, metal surfaces or plastic surfaces as well as destroy lines, hoses and seals.

- ► Do not use aggressive cleaning agents.
- ► Use acid-free and pH-neutral cleaning agents.
- ► Do not clean brake hoses, gaskets and air lines with petrol, benzene, petroleum, or mineral oils.
- ► Only use water to remove stubborn dirt.

NOTE

Material damage caused by high-pressure cleaners!

When using a high-pressure cleaner, surfaces and components can be damaged.

- ► Keep a minimum distance of approx. 0.3 m between the nozzle of the high-pressure cleaner and the surface being cleaned.
- ► Do not aim the water jet directly at electrical components, plug connections, seals or hoses.

NOTE

Material damage caused by road salt!

The use of road salt on public roads can damage the trailer if it is not cared for properly.

- ► After driving on roads treated with road salt, clean the trailer immediately with lots of cold water.
- ► Avoid warm water because it heightens the effect of the salt.

NOTE

Environmental damage caused by chemicals!

Along with dirt, lubricants and cleaning agents can also end up in the waste water and endanger the environment when you wash your vehicle.

- ► Do not allow lubricants or other cleaning chemicals to escape into drains, sewers or to seep into the ground.
- ► Only clean in suitable washing areas with an oil separator.
- ► Observe the applicable national environmental protection measures.

Cleaning the trailer

- ► Park the trailer on a level and firm surface.
- ► Apply the parking brake *(see "5.6.2 Parking brake", pg. 33)*.
- ► Secure the trailer with wheel chocks *(see "5.1 Using wheel chocks", pg. 20)*.
- ► Clean the trailer with lots of water and an acid-free and pH-neutral cleaning agent.
- ► Maintain a spraying distance of approx. 30 cm when using high-pressure cleaners.
- ► Allow the trailer to dry.
- ✓ The trailer is cleaned.
- ► Carry out a departure check *(see "7.1 Commissioning before each trip", pg. 67)*.

Cleaning the box body superstructure

INFO

For special transported goods, observe the applicable hygiene and cleaning regulations!

- ► Park the trailer in a suitable washing area with firm and level ground.
- ► Apply the parking brake. *(see "5.6.2 Parking brake", pg. 33)*
- ► Secure the trailer with wheel chocks. *(see "5.1 Using wheel chocks", pg. 20)*
- ► Clean the box body superstructure from the outside with lots of water and an acid-free and pH-neutral cleaning agent.
- ► Maintain a spraying distance of approx. 30 cm when using high-pressure cleaners.
- ► Clean the sealing seams.
- ► Allow the box body superstructure to dry.
- ✓ The box body superstructure is cleaned.
- ► Carry out a departure check Commissioning before each trip.

10.2 Maintenance

⚠ WARNING

Risk of accident and property damage caused by improperly performed or lack of maintenance!

Improperly performed or lack of maintenance work and incorrect replacement parts affect safety.

- ► Observe the national accident prevention regulations.
- ► Only have necessary maintenance work performed by an authorised specialist workshop.
- ► Only use original spare parts.
- ► Observe the maintenance instructions of the installed supplied components.

⚠ WARNING

Risk of accident due to instability and rolling away!

Unintentional trailer movements can cause serious injury and property damage.

- ► Secure the trailer against rolling away by applying the parking brake.
- ► Use the wheel chocks to prevent the trailer from rolling away.
- ► Park the trailer on a solid surface to avoid sinking in or tipping.
- ► When the trailer is unhitched, ensure stability. If necessary, use additional supports.

The aim of maintenance is:

- ○ that the commissioned trailer is kept operating safely and performing properly during use,
- ○ to prevent downtimes,
- ○ to keep the costs of operational readiness reasonable and financially justifiable,
- ○ and to limit unavoidable repair expenditures.

10.2.1 Regular checks and functional testing

To ensure that the trailer is in proper operating condition, the safety-related equipment must be checked regularly for proper function, its effectiveness must be ensured and the recurring inspections must be performed.

- ► Prior to starting each trip, perform a departure check *(see "7.1 Commissioning before each trip", pg. 67)*.
- ► Perform legally prescribed general inspections punctually.
- ► Observe the intervals and instructions for testing and maintenance of the supplied components (e.g. axles) contained within the respective supplied operating instructions.
- ► Report any detected safety defects:
  - ○ Take the trailer out of operation if operational safety is not ensured.
  - ○ When there is a change of shift, inform the colleague starting the next shift about observed defects and implemented measures.
- ► Perform the following checks and functional testing at the intervals prescribed:

Daily, or before every journey

Component	Inspection
Rear underrun protection/side collision protection	► Visually inspect for wear, damage and proper attachment.
Compressed air tank	► Actuate the water drain valve *(see "5.5 Draining the compressed air tanks", pg. 31)*.
Lighting equipment	► Visually inspect to make sure it is working properly.
Hydraulic rear width expansion (optional)	► Visually inspect for wear, damage, leakage and proper attachment, perform a functional test on the pump.
Kingpin/coupling plate	► Visual check for wear, damage and proper attachment.
Seals and gaskets	► Visual inspection for wear, damage, leaks

Weekly

Component	Inspection
Compressed air tank	► Perform a visual inspection for wear and damage.
Tyres	► Check the tread depth and tyre pressure

Component	Inspection
Kingpin/coupling plate	► Lubricate with high-pressure grease
Keyhole plates	► Remove bulk material residues behind the keyhole plates and clean without water.

► Go to an authorised specialist workshop if defects have been found.

10.2.2 Maintenance intervals for the authorised specialist workshop

Assembly group	Maintenance work	Monthly	Every six months	Yearly
Wheels and tyres *(see "10.2.4 Wheels and tyres", pg. 98)*	► Check the tightening torques of the wheel nuts. Additionally: For the first time after 50 and 100 km or after every wheel change ► Check the tyres and the tyre inflation pressure.		X	
Axle and suspension *(see "10.2.5 Axle and suspension", pg. 98)*	► Check the tightening torque of the fixing bolts. ► Observe the maintenance instructions from the axle manufacturer.	X		
Brake system *(see "10.2.6 Brake system", pg. 98)*	► Check the screw connections (additionally: after the first trip). ► Check brake pad wear ► Check the brake discs/brake drums for damage and cracks.			X
Compressed air system *(see "5.5 Draining the compressed air tanks", pg. 31)*	► Check the compressed air tank. ► Check the compressed air connections. ► Check the compressed air lines.			X
Lubrication points *(see "10.2.7 Lubricating the trailer", pg. 99)*	► Top up the grease on all the lubrication points. ► Pay attention to the lubrication points shown in the applicable operating instructions.			X

Assembly group	Maintenance work	Monthly	Every six months	Yearly
Electrical equipment *(see "10.2.8 Electrical equipment", pg. 99)*	► Check all electrical components for proper function.			X
Contour marking *(see "10.2.9 Contour marking", pg. 100)*	► Check the contour markings for completeness and legibility.	X		
Bolted connections *(see "10.2.10 Bolted connections", pg. 100)*	► Perform a visual inspection for wear and damage.			X
Load securing	► Perform a visual inspection for wear and damage.			X
Superstructure *(see "10.2.13 Superstructure", pg. 100)*	► Check the bolted connections. ► Check all the superstructure components and locks			X
Kingpin *(see "10.2.12 Kingpin and coupling plate", pg. 100)*	► Perform a visual inspection for wear and damage. ► Measure the wear and replace the kingpin if necessary. ► Check the mounting and tighten if required. ► Lubricate with high-pressure grease.			X

10.2.3 Maintenance intervals for the driver

Assembly group	Maintenance work	Monthly	Every six months	Yearly
Wheels and tyres *(see "10.2.4 Wheels and tyres", pg. 98)*	► Check the tightening torques of the wheel nuts. ► Check the tyres and the tyre inflation pressure.			X
Axle and suspension *(see "10.2.5 Axle and suspension", pg. 98)*	► Observe the maintenance instructions from the axle manufacturer.	X		
Compressed air system *(see "5.5 Draining the compressed air tanks", pg. 31)*	► Check the compressed air tank. ► Check the compressed air connections.			X

Assembly group	Maintenance work	Monthly	Every six months	Yearly
Contour marking *(see "10.2.9 Contour marking", pg. 100)*	► Check the contour markings for completeness and legibility.	X		
Load securing *(see "10.2.11 Load securing", pg. 100)*	► Perform a visual inspection for wear and damage.			X
Heater	► Switch on for approx. 10 min. outside of the heating period.	X		
Kingpin *(see "10.2.12 Kingpin and coupling plate", pg. 100)*	► Perform a visual inspection for wear and damage.			X
Lubrication points *(see "10.2.7 Lubricating the trailer", pg. 99)*	► Top up the grease on all the lubrication points. ► Pay attention to the lubrication points shown in the applicable operating instructions.			X

10.2.4 Wheels and tyres

- ► Check the tightening torques of the wheel nuts. The tightening torque depends on the rim design.
- ► Observe the supplier documentation.
- ► Perform a visual inspection for wear and damage:
  - ○ Check the tread depth of the tyres regularly.
  - ○ Check the tyres for damage.
- ► Check the tyre inflation pressure regularly according to the manufacturer specifications and correct if necessary. The tyre inflation pressure depends on the technical characteristics of the tyre.
- ► Observe the supplier documentation.
- ► Drive only with approved rim and tyre combinations.
- ► Observe the seasonal tyres (summer or winter tyres) for the trailer.

10.2.5 Axle and suspension

- ► Perform a visual inspection for wear and damage.
- ► Have defective or damaged components replaced.
- ► Check the tightening torque of the fixing bolts.
- ► Observe the maintenance instructions from the axle manufacturer.

10.2.6 Brake system

⚠ WARNING

Risk of accident caused by defective brakes!

A failure or defect of the brake system can lead to serious accidents.

- ► Drive only with properly functioning brake system.
- ► In case of defect or wear, park the trailer immediately.
- ► Abnormalities or malfunctions of the brake system must be immediately repaired by an authorised specialist workshop.
- ► Have the trailer towed if necessary.

Checking the axles/brake system

- ► Check all bolted connections on new trailers after repairs, after the first trip or at the latest after 1,000 km.
- ► Retighten bolted connections with the tightening torques specified by the manufacturer.
- ► Observe the maintenance instructions of the installed supplied components.
- ► Immediately consult an authorised specialist workshop if there are defects with the brake or ABS/EBS system *(see "9.2 Fixing braking abnormalities", pg. 90)*.

Servicing the diagnostics connection for the EBS brake system

The EBS diagnostics connection is established using the EBS plug connector (ISO 7638, 7-pin) at the front of the vehicle. The diagnosis may only be performed by an authorised specialist workshop.

- ► Keep the protective caps closed to prevent soiling.

Brake pad conditioning

⚠ WARNING

Risk of accident due to rear-end collision!

When performing braking for conditioning, other road users can collide with the rear of your trailer and seriously injure themselves.

- ► When performing the braking for conditioning, make sure that other road users are not endangered by this action.

In order to obtain maximum performance and a long service life for the brake pads, the brake pads must be in an optimum condition. It may be necessary to condition the brake pad for this optimum condition due to underloading, weather conditions and when the trailer has been stood idle for a long period of time.

- ► As a preventative measure, perform the conditioning by braking accordingly.
- ► Procedure:
  - ○ Strong braking and/or dragging brakes
  - ○ Then allow the brake pads to cool down
  - ○ Repeat in a cyclical loading mode
- ► Observe other technical information from the axle manufacturer regarding the topic of "Conditioning".

Obtaining the reference braking values

The reference braking values are used as the default for the legal brake tests. The reference braking values for every current trailer can be obtained on the KRONE website *(see "12.2 Customer service and support", pg. 105)*.

10.2.7 Lubricating the trailer

NOTE

Material damage caused by dry lubrication points!

Too little or a lack of grease can result in damage to moving parts.

- ► Lubricate the trailer regularly.

- ► Top up the grease on all the lubrication points.
- ► Lubricate moving parts on the trailer superstructure (e.g. door locks, hinges) as needed.
- ► Also observe the enclosed supplier documentation.

10.2.8 Electrical equipment

- ► Perform a visual check of the electrical connections for the lighting and ABS/EBS for wear and damage.
- ► Perform a visual check of the lighting and signalling systems.
- ► Perform a visual inspection of the electrical connections.

- ► Have defective electrical components replaced by an authorised specialist workshop.
- ► Only have work on the electrical equipment performed by trained electricians, or by personnel trained especially for the purpose, in accordance with all applicable safety rules and regulations.

10.2.9 Contour marking

- ► Perform a regular visual check of the contour markings.
- ► Pay attention to damage, soiling and visibility.
- ► Have defective or damaged contour markings replaced.

10.2.10 Bolted connections

- ► Check bolted connections regularly for settling signs.
- ► Replace defective bolted connections and those with visible damage.
- ► Observe the instructions about bolted connections in the supplier documentation.

10.2.11 Load securing

- ► Perform a visual inspection for wear and damage.
- ► Have defective or damaged components replaced.

10.2.12 Kingpin and coupling plate

⚠ WARNING

Risk of accident caused by wear!

A worn kingpin can cause the trailer to be ripped off while driving and result in serious injuries and material damage.

- ► Check the wear on the kingpin regularly.
- ► Worn kingpins must be replaced by an authorised specialist workshop.

- ► Check the kingpin and coupling plate for wear and damage.

INFO

Observe the maintenance instructions, dimensions and values of the kingpin manufacturer. Worn kingpins must be checked and replaced by an authorised specialist workshop.

- ► Check the mounting and tighten the fastening bolts if required.
- ► Lubricate the kingpin and coupling plate with high pressure grease.

10.2.13 Superstructure

- ► Inspect all superstructure components for proper function, wear, and damages.
- ► Have defective or damaged components replaced immediately.
- ► Keep the components in clean condition.

10.2.14 Pallet storage boxes

- ► Open the pallet storage box *(see "5.18 Pallet storage box", pg. 50)*.
- ► Clean and grease the area of the guide rails on both sides across the entire length.

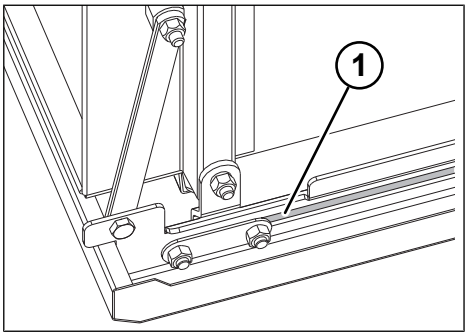


Fig. 10-1: Pallet storage box

1 Guide rails

10.2.15 Tail lift batteries

⚠ WARNING

Risk of explosion due to released gases!

Gases released from the battery can explode, thereby injuring people and causing material damage.

- ► Turn off the tractor unit's motor while servicing the battery.
- ► Avoid fire, naked lights, sparks, and smoking near the batteries.

⚠ CAUTION

Risk of injury due to battery acid!

- ► Wear protective gloves and glasses when servicing batteries.
- ► Immediately rinse off acid splashes with clear water.

INFO

Be mindful of the capacity when replacing batteries. The capacity must match the generator output of the tractor unit. The battery capacity is indicated on the housing.

- ► Regularly check the charge state.
- ► Avoid damage due to deep discharging when the batteries are under high burden. If necessary, use an external charger.
- ► Regularly check the acid condition.

10.3 Repair

⚠ DANGER

Risk of accident due to unintended vehicle movements!

Unintended vehicle movements can cause serious injury.

- ► Use wheel chocks to prevent the trailer from rolling away.
- ► Park the trailer on solid and level ground to avoid sinking in or tipping.
- ► During maintenance and repair work, observe the stability of the trailer.
- ► Observe the applicable national accident prevention regulations.

⚠ CAUTION

Risk of injury due to unexpected component movements!

Pneumatically or electrically driven components may move unexpectedly and injure people.

- ► Fully depressurise the pneumatic system and disconnect the electrical connections before beginning maintenance work. Ensure that the system cannot be switched on again.

⚠ WARNING

Risk of accident and material damage caused by improperly performed troubleshooting and repair work!

Improperly performed troubleshooting and repair work affect safety and may lead to serious injuries and property damage.

- ► Only have necessary repair work performed by an authorised specialist workshop.
- ► Only use original spare parts and spare parts authorised by KRONE.
- ► Observe the instructions concerning troubleshooting issued by the suppliers of the installed components.
- ► Verify functionality after installing/repairing components.

Repair work includes the replacement and the repair of components and is only required when components are damaged by wear or other external circumstances.

The following applies to the specialist workshop:

- The necessary repair work must be performed professionally, according to the rules of engineering and in accordance with the applicable regulations.
- Do not repair worn or damaged components using a makeshift repair.
- Only use original or approved spare parts for repairs *(see "12.1 Spare parts", pg. 105)*.
- Always replace any removed seals with new seals.
- Welding work on the frame, chassis and on bearing parts may only be performed after consultation with KRONE customer service and KRONE construction.

Replacing defective bulbs

⚠ WARNING

Risk of accident due to defective bulbs!

Defective bulbs cause poor visibility and insufficient perception by third parties. There is a risk of traffic accidents.

► Replace defective bulbs immediately.

Defective bulbs can be replaced by the driver.

- Use similarly rated bulbs as replacements.
- Switch off the lighting system when changing bulbs to prevent a short circuit.
- Check the fuses of the lighting system if necessary.
- Observe the supplier documentation when replacing bulbs.
- If there are frequently occurring defects, have the electrical system checked out by an authorised specialist workshop.

11 Decommissioning

11.1 Temporary decommissioning

NOTE

Material damage caused by long downtimes!

If the decommissioning lasts for several months, the tyres can be damaged by storage deterioration.

► Move the trailer once a month to prevent the tyres from deteriorating during storage.

The following measures need to be taken to temporarily decommission the trailer:

► Clean the trailer.

► Drive the trailer onto firm and level ground.

► If necessary, protect the trailer from excess water and snow loads.

► Apply the parking brake *(see "5.6.2 Parking brake", pg. 33)*.

► Secure the trailer against rolling away *(see "5.1 Using wheel chocks", pg. 20)*.

► Drain the brake system *(see "5.5 Draining the compressed air tanks", pg. 31)*.

► Before the start of the frosty period, fill up the brake lines with antifreeze *(see "5.5 Draining the compressed air tanks", pg. 31)*.

► Close off the coupling heads for the supply and control connections separately with protective caps.

► Observe the instructions for decommissioning the installed supplied components.

✓ The trailer is temporarily decommissioned.

11.2 Recommissioning

⚠ WARNING

Risk of accident and material damage due to lack of checks!

After longer downtimes, the wear condition of the KRONE trailer's axle can change. Operating the axle when not in perfect technical condition can lead to serious accidents or material damage.

► Perform a component check before driving for the first time.

► Fix any detected faults before driving off.

► Serious faults must be repaired by an authorised specialist workshop.

To recommission the trailer after temporary decommissioning, the following measures must be taken:

► Perform a general visual inspection.

► Check the entire lighting system.

► Check the tyre inflation pressure, age and condition of the tyres.

► Check the function of the brake system.

► Check the function of the air suspension.

► Grease the lubrication points.

► Carry out a departure check *(see "7.1 Commissioning before each trip", pg. 67)*.

► Check the coupling heads for the supply and control connections for cleanliness and functioning seals.

► Observe the other applicable operating instructions for recommissioning the installed supplied components.

✓ The trailer has been put back into operation again.

11.3 Final decommissioning and disposal

NOTE

Environmental damage due to improper disposal!

Improperly disconnecting and disposing of operating materials along with electric, pneumatic and hydraulic parts may harm the environment.

- ► Ensure that they are disposed of properly by a specialist company
- ► Observe the national and local regulations for the disposal.

After the final decommissioning, the trailer must be disposed of properly. In doing so, the electrical, pneumatic and hydraulic components must be disposed of separately.

To fully decommission the trailer and to dispose of it properly, the following actions must be performed:

- ► Ensure that the disposal is done properly and in an environmentally sound way.
- ► Have the trailer disposed of properly by a specialist company.
- ► Observe the national and local regulations for the disposal.
- ► Observe the instructions for decommissioning issued by the suppliers of the installed components.
- ✓ The trailer is permanently taken out of operation and disposed of.

12 Spare parts and customer service

12.1 Spare parts

NOTE

Property damage caused by incorrect spare parts!

The use of non-approved or incorrect spare parts affects safety and can result in voiding of the operating permit.

► Only use original spare parts.

The original spare parts are regularly checked for safety and functionality. The use of original spare parts guarantees road and operating safety and the operating permit is retained.

► When ordering spare parts, indicate the vehicle ID number.

You can order spare parts by phone under +49 (0) 59 51 / 209-302 or from the KRONE website. An electronic spare parts catalogue is available on the website: www.krone-trailer.com

12.2 Customer service and support

The customer service department at Fahrzeugwerk Bernard KRONE GmbH & Co. KG can be reached using the following contact data:

Customer Service

Telephone: +49 (0) 59 51 / 209-320

email: kd.nfz@krone.de

Internet: www.krone-trailer.com/service/kundendienst

Spare parts

Telephone: +49 (0) 59 51 / 209-302

email: Ersatzteile.nfz@krone.de

Internet: www.krone-trailer.com

Fahrzeugwerk Bernard KRONE
GmbH & Co. KG
Bernard-Krone-Straße 1
D-49757 Werlte

13 Technical data

13.1 Dimensions and weights

The technical data can vary depending on the vehicle equipment. A list of the technical data for all variants is not possible here. The vehicle-specific technical data is noted in the vehicle documents. The measurements and weights in the following table refer to the basic vehicle model.

Dry Liner (SDK 27 eLB4-STG)

Dimensions and weights	
Permitted total weight	39,000 kg
Fifth-wheel load	12,000 kg
Axle load	27,000 kg
Dead weight	approx. 6,160 kg
Coupling height	1,150 mm
Axle distances	1,310 mm
Internal clearance length	13,620 mm
Internal clearance width	2,480 mm
Internal clearance height	2,725 mm
Outer width	2,550 mm

Further information can be found on our website www.krone-trailer.com.

13.2 Plugs and socket pin assignments

13.2.1 Socket S (white) ISO 3731, 7-pin

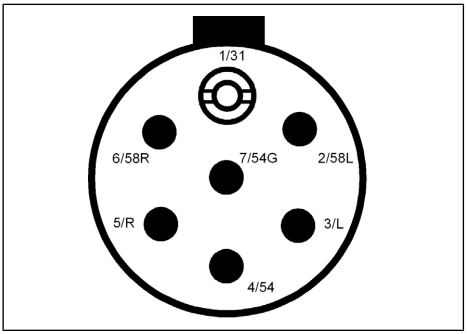


Fig. 13-1: Socket ISO S 3731, 7-pin

Contact no.	Colour	Function
1/31	White	Ground
2/58L	Black	Unassigned
3/L	Yellow	Reversing light
4/54	Red	Permanent power (+24 V)
5/R	Green	Steering axle lock (optional)
6/58R	Brown	Lift axles (optional)
7/54G	Blue	Rear fog light

13.2.2 Socket N (black) ISO 1185, 7-pin

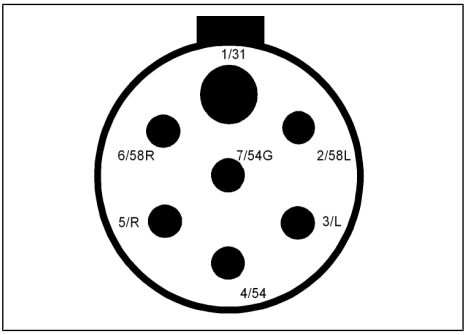


Fig. 13-2: Socket ISO N 1185, 7-pin

Contact no.	Colour	Function
1/31	White	Ground
2/58L	Black	Rear, boundary and licence plate lights, left-hand side
3/L	Yellow	Direction indicator, left
4/54	Red	Brake light
5/R	Green	Direction indicator right
6/58R	Brown	Rear, boundary and licence plate lights, right-hand side
7/54G	Blue	Unassigned

13.2.3 Socket ISO 12098, 15-pin

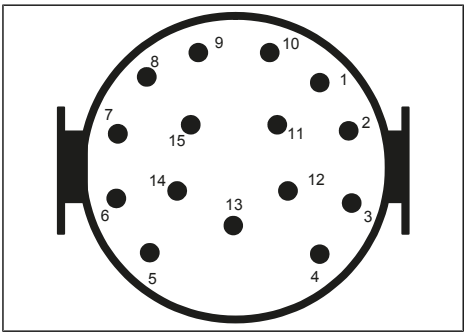


Fig. 13-3: Socket ISO12098, 15-pin

Contact no.	Colour	Function
1	Yellow	Direction indicator, left
2	Green	Direction indicator right
3	Blue	Rear fog light
4	White	Ground
5	Black	Rear, boundary and licence plate lights, left-hand side
6	Brown	Rear, boundary and licence plate lights, right-hand side
7	Red	Brake light
8	Pink	Reversing light
9	Orange	Permanent power (+24 V)
10		Steering axle lock (optional)
11		Unassigned
12	Grey	Lift axles (optional)
13		Unassigned
14		Unassigned
15		Unassigned

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03/2020